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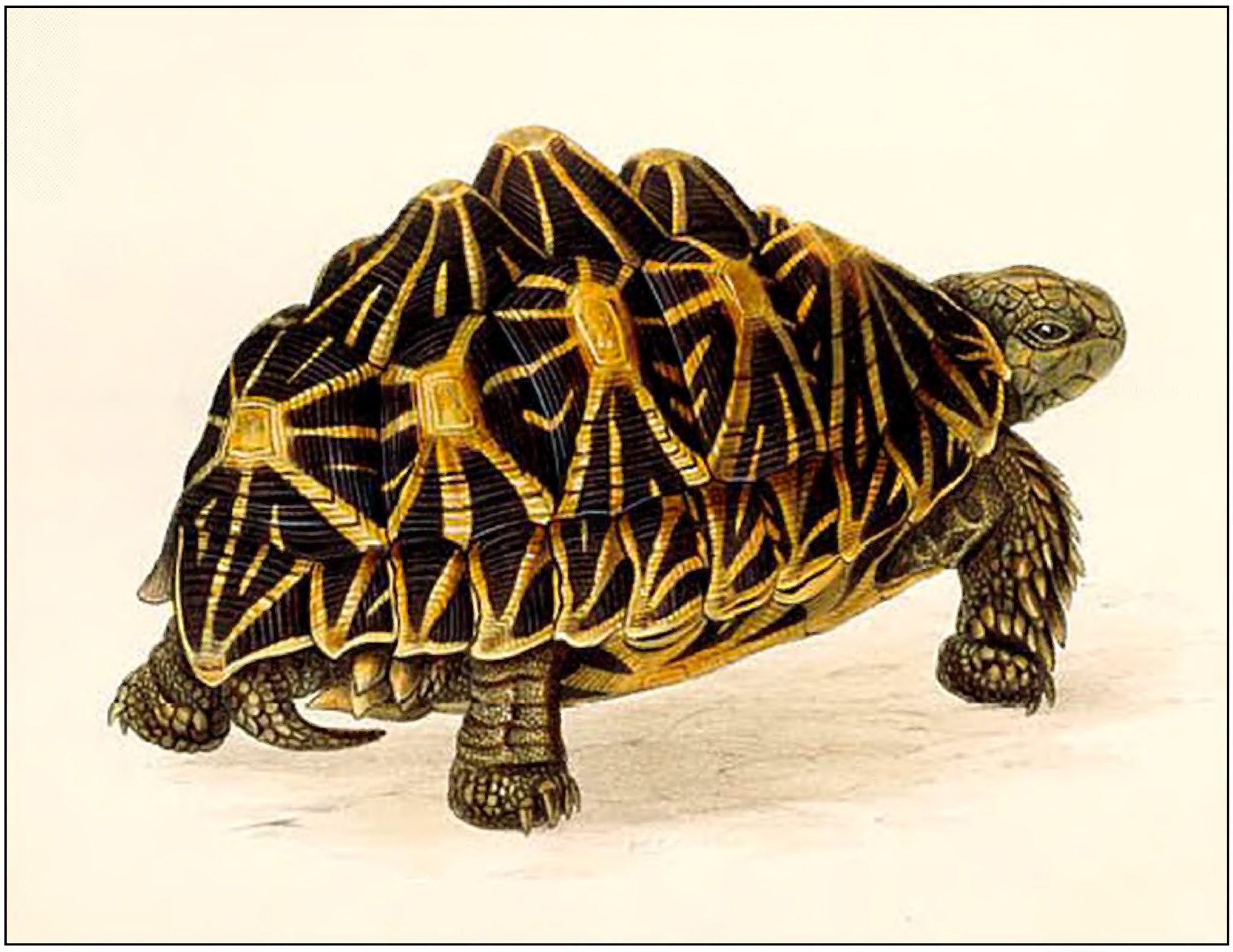

BULLETIN OF THE CHICAGO HERPETOLOGICAL SOCIETY
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Miscellanea Herpetologica Gabonica XVI . . . . Olivier S. G. Pauwels, Alain Pauly, Alessandro Araldi, Romaric Ndonda Makemba, Davy Fonteyn, Richard Oslisly and Alden M. Whittaker 93

Observations of Two Possible Predators on the Eggs of the Eastern Gray Treefrog (*Hyla versicolor*) . . . . . .Geoffrey R. Smith 99

Notes on the Herpetofauna of Western Mexico 23: Predation by a Pacific Coast Parrot Snake (*Leptophis diplotropis*) on a Milky Treefrog (*Trachycephalus typhonius*) in the municipality Huejutla de Reyes, Hidalgo, Mexico . . . . . Erika Sugey García Mata, Daniel Cruz-Sáenz, Andrés Rodríguez-López, José Orlando Ríos-Martínez, Luis Antonio Hernández-Dávila, David Lazcano and Larry David Wilson 101

The Great Action Jackson Coachwhip Capers . . . . . Roger A. Repp 106

The Tympanum . . . . . .Robert Krause 111

Minutes of the CHS Board Meeting, April 9, 2020 111

Advertisements 112

New CHS Members This Month 112

Cover: Indian star tortoise, *Geochelone elegans*. Drawing (as *Testudo actinodes*) from *A Monograph of the Testudinata* by Thomas Bell, 1832–1836.

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Miscellanea Herpetologica Gabonica XVI

Olivier S. G. Pauwels [1], Alain Pauly [2], Alessandro Araldi [3], Romaric Ndonda Makemba [4, 5], Davy Fonteyn [4], Richard Oslisly [6, 7] and Alden M. Whittaker [8]

Abstract

We present new Gabonese locality records, ecological and morphological data or unpublished material for *Kinixys erosa* (Testudinidae), *Trachylepis albilabris* (Scincidae), *Calabaria reinhardtii* (Boidae), *Dasypeltis fasciata*, *Hapsidophrys smaragdinus*, *Philothamnus carinatus*, *P. heterodermus* and *P. nitidus nitidus*, *Thrasops flavigularis*, *Toxicodryas blandingii* and *T. pulverulenta* (Colubridae), *Dendroaspis jamesoni jamesoni*, *Naja melanoleuca* (Elapidae), *Mehelya poensis*, *Polemon collaris* (Lamprophiidae), *Natriciteres fuliginoides* (Natricidae), *Python sebae* (Pythonidae), *Bitis gabonica* and *Causus maculatus* (Viperidae). One snake species is newly recorded from Loango National Park, and three from Estuaire Province.

Keywords

Biodiversity, herpetofauna, Testudines, Squamata, *Eurema* butterfly, protected areas, caves, Gabon, Equatorial Africa.

Introduction

The first 15 installments of the series Miscellanea Herpetologica Gabonica filled numerous gaps in the knowledge of the geographical distribution, morphology and natural history of the reptiles of Gabon, yet the ongoing accumulation of new records demonstrates how poorly known they still are locally, even in the most prospected areas. Making available freshly gathered as well as old but unpublished observations and material is crucial to help improving the herpetology of the country, and to prepare a revised and improved version of the synthetic work by Pauwels and Vande weghe (2008).

The valuable data gathered for our series are generally collected by field workers, not herpetologists. For instance, most of the snakes reported in the present volume were killed by villagers in the 1980s. They were preserved by AP during field trips while he was based in Ntoum, Estuaire Province, between 1984 and 1987, working as an entomologist for the Food and Agriculture Organization (FAO; Pauly, 1998). AA made opportunistic herpetological observations while working as field coordinator for the gorilla reintroduction project of The Aspinall Foundation in Batéké Plateau National Park from 2015 to 2019. The observations made by RO were done in the course of archaeological activities in one the most promising burial sites discovered in recent times in subsaharan Africa (Anonymous, 2018).

Material and Methods

New photographic and voucher material was identified using the keys and morphological information provided by Pauwels and Vande weghe (2008). Snake ventral scales were counted according to the method of Dowling (1951). Snake dorsal scale rows were counted at one head length behind head, at midbody (above the ventral corresponding to half of the total number of ventrals), and at one head length before vent; subcaudal counts exclude the terminal pointed scale. Paired meristic characters are given left/right. Morphological data of all preserved specimens are presented in Table 1.

Abbreviations: Institutions: RBINS = Royal Belgian Institute of Natural Sciences, Brussels, Belgium. Morphology: A = anal plate; AT = anterior temporals; D = divided; DSR = number of dorsal scale rows; IL = number of infralabials, followed in brackets by the number of IL in contact with the first pair of sublinguals; K = keeled; Lor = number of loreal scales; PoO = number of postoculars; PreO = number of preoculars; PV = number of preventrals; S = single; SC = number of subcaudals; SL = number of supralabials, followed in brackets by the SL in contact with the orbit; SubO = number of suboculars; SVL = snout–vent length; TaL = tail length; U = unkeeled; VEN = number of ventral scales. Varia: Dept = Department; NP = National Park; Prov. = Province.

Results

Testudines

Testudinidae

Kinixys erosa (Schweigger, 1812)

On 17 December 2019 RNM photographed an adult individual

1. Department of Recent Vertebrates, Royal Belgian Institute of Natural Sciences, Rue Vautier 29, B-1000 Brussels, Belgium. osgpauwels@yahoo.fr; opauwels@naturalsciences.be (corresponding author); lynn.pallemaerts@gmail.com
2. Department of Entomology, Royal Belgian Institute of Natural Sciences, Rue Vautier 29, B-1000 Brussels, Belgium. Alain.Pauly@naturalsciences.be
3. Projet Protection des Gorilles, The Aspinall Foundation, Parc National des Plateaux Batéké, Gabon. araldialessandro@gmail.com
4. Université de Liège - Gembloux Agro-Bio Tech, Forest is life, Terra Teaching and Research Centre, Passage des Déportés 2, B-5030 Gembloux, Belgium. r.n.makemba@gmail.com; davy.fonteyn@doct.uliege.be
5. Université des Sciences et Techniques de Masuku, Institut National Supérieur d'Agronomie et de Biotechnologies, BP 941, Franceville, Gabon.
6. Institut de Recherche pour le Développement, UMR PALOC, 43 rue Buffon, 75005 Paris, France. richard.oslisly@ird.fr
7. Agence Nationale des Parcs Nationaux, BP 20379, Libreville, Gabon.
8. Division of International Conservation, US Fish and Wildlife Service, 5275 Leesburg Pike, Falls Church, VA 22041-3803. alden_whittaker@fws.gov

Figure 1. Adult *Kinixys erosa* crossing a forest road near Miyanza, Ogooué-Lolo Prov., eastern Gabon. Photograph by R. Ndonda Makemba.

that was crossing the road by day near the village of Miyanza (= Mihandza; ca. 0°43'02.9"S, 13°25'51.9"E), Mouloundou Dept, in Ogooué-Lolo Prov. (Figure 1). New locality. Within this dept, this tortoise was already recorded from three localities (Maran and Pauwels, 2005; Pauwels, Bahaa-el-din et al., 2018). In spite of being intensively hunted throughout the country, this species is still regularly observed in direct proximity to human settlements.

Squamata
Scincidae
Trachylepis albilabris (Hallowell, 1857)
An individual was found on 6 March 2020 at 2 PM in Iroungou Cave (*Grotte d'Iroungou*; 2°09'20.0"S, 11°10'45.0"E), Dola Dept, Ngounié Prov., at a depth of 20 meters under the forest floor. Figure 2 shows it *in situ*, and allows seeing the tricarinated dorsals, the prefrontals in broad contact, the separated supranasals, and an orange spot in front of the shoulder. The color of the lower flanks is lighter than the dorsum but not abruptly contrasting with the dorsum color. The posteriormost of the four supraoculars is separated by a single scale from the anterior supratemporal. Its total length was about 12 cm. It is the first time that a scincid is found in a cave in Gabon (Pauwels, Carlino et al., 2019). The skink did not try to escape when photographed; it was rather apathetic. It is possible that it had accidentally fallen through the vertical entrance of the cave; other individuals were seen by RO on the forest floor outside the cave, at proximity to its entrance. New dept record (Pauwels, Kamdem Toham et al., 2002).

Boidae
Calabaria reinhardtii (Schlegel, 1851)
An adult Calabar boa killed by locals was found by AP in 1985 in the *Forêt de la Mondah*, now a part of the protected area Arboretum Raponda-Walker, Komo-Mondah Dept, in Estuaire Prov. Its head and neck were preserved (RBINS 19466). It shows a vertically elliptical pupil. This snake had already been cited from the arboretum (Pauwels, 2016) and the nearby Cap Estérias (Pauwels and David, 2008), but not yet vouchered.

Colubridae
Dasypeltis fasciata Smith, 1849
We examined the head and neck of an adult individual (RBINS 19467) and of a subadult individual (RBINS 19468) killed in 1983 in the area of Ntoum, Komo-Mondah Dept, Estuaire Prov., preserved by G. Evers and by P. D. Manser, respectively. Both show a uniformly pale belly and an indistinct dorsal pattern. The width of their paraventral row is less than two times the width of the other dorsal scale rows. The lengths of their frontals are subequal to that of their parietals. New dept record (Pauwels and Vande weghe, 2008).

Figure 2. *Trachylepis albilabris* in situ in Iroungou Cave, Ngounié Prov., southern Gabon. Photograph by Pascal Mora.

Hapsidophrys smaragdinus (Schlegel, 1837)
An adult individual was collected by G. Evers in Ntoum area, Komo-Mondah Dept, Estuaire Prov., in 1983. Its head and forebody (RBINS 19469) were preserved. Its dorsal color was green in life. New locality record; the Common emerald snake had already been recorded from the dept by Pauwels, Biyogho Bi Essono et al. (2017). On 25 September 2018 DF photographed an adult individual on a fence in Bambidié (0°44'27.9"S, 12°58'31.0"E), Mouloundou Dept., Ogooué-Lolo Prov. (Figure 3). New locality record (Pauwels and Vande weghe, 2008).

As an outgroup in their phylogenetic study on the genus *Philothamnus*, Engelbrecht et al. (2018) used a specimen of *Hapsidophrys smaragdinus*, but did not provide details on the locality. The voucher was actually the specimen "ID number J349, PEM R5383," from "Latitude -1.915, Longitude 9.871" (M. Burger, pers. comm. to OSGP, Nov. 2018), i.e., 1°54'54.0"S, 9°52'15.6"E, in Rabi-Toucan oilfields in Ogooué-Maritime Prov. In fact, this specimen, collected by Bill Branch, Marius Burger and OSGP was a voucher for the record of that species from this site by

Figure 3. Adult *Hapsidophrys smaragdinus* in Bambidié, Ogooué-Lolo Prov., central-eastern Gabon. Photograph by D. Fonteyn.

Figure 4. Adult *Philothamnus nitidus nitidus* swimming in Loango National Park, Ogooué-Maritime, western Gabon. Photograph by A. M. Whittaker.

Pauwels, Burger et al. (2006), even if no precise voucher and locality had been provided in the latter publication.

Philothamnus carinatus (Andersson, 1901)
In a recent phylogenetic study on the genus *Philothamnus* (Engelbrecht et al., 2018), the map illustrating the geographic locations of the genetic samples used shows three dots on Gabon (two for *P. carinatus* and one for *P. nitidus nitidus*), but no information is available on the vouchers used or the precise localities of the samples. M. Burger, co-author of that paper, indicated (pers. comm. to OSGP, Nov. 2018) that the *P. carinatus* samples originated from the specimen PEM R5441 ("ID number J335, Latitude -2.153, Longitude 9.589," i.e., 2°09'10.8"S, 9°35'20.4"E) and PEM R5938 ("ID number J354, Latitude -2.170, Longitude 10.030," i.e., 2°10'12.0"S, 0°01'48.0"E), respectively. The first locality lies in Loango NP in Ogooué-Maritime Prov.; the corresponding specimen was collected by Bill Branch, Marius Burger and OSGP and already published (Pauwels, Branch et al., 2002). The second locality corresponds to a specimen collected by the same persons and lies near Rabi-Toucan oil fields in Ogooué-Maritime Prov.; it supported the mention of that species from this area by Pauwels, Burger et al. (2006). Engelbrecht et al. (2018) showed that the species *P. carinatus* includes two well-supported sister clades; the Gabonese population seems to belong to the typical form.

Philothamnus heterodermus (Hallowell, 1857)
An adult individual was found freshly killed in 1984 in Ntoum (ca. 0°22'26.4"N, 9°46'24.2"E), Komo-Mondah Dept, Estuaire Prov., by AP. Its head and forebody were preserved (RBINS 19453). It had a green dorsal background color in life. It shows black bars on the dorsal surface of the forebody. Its temporal formula is 2+2+2 on each side. Its internasals are slightly shorter and narrower than its prefrontals. On the left side it shows two elongate loreals, one lying above the other. New prov. record (Pauwels and Vande weghe, 2008).

Philothamnus nitidus nitidus (Günther, 1863)
During a boat trip in Loango NP on 25 February 2020 near midday AMW photographed an uniformly bright green adult individual swimming in Ngové River (2°04'36.1"S, 9°36'17.8"E) (Figure 4), Etimboue Dept, Ogooué-Maritime Prov. First record for the park and for the dept. This brings the total number of reptile species known from the park to 45 (Pauwels, Branch et al., 2002; Pauwels, 2016).

The sample for *Philothamnus nitidus nitidus* used by Engelbrecht et al. (2018; see above under the account for *P. carinatus*) originated from the specimen PEM R 5397 ("ID number J337, Latitude -2.091, Longitude 9.962," i.e., 2°05'27.6"S, 9°57'43.2"E; pers. comm. of M. Burger to OSGP, Nov. 2018). It was caught by Bill Branch, Marius Burger and OSGP in Rabi-Toucan oilfields, and was the voucher to list this species from this site (Pauwels, Burger et al., 2006), even if no reference to a precise voucher had been given.

Thrasops flavigularis (Hallowell, 1852)
On 4 Nov. 1985 AP encountered an adult individual (RBINS 19454) killed by villagers in Ntoum (ca. 0°22'26.4"N, 9°46'24.2"E), Komo-Mondah Dept, Estuaire Prov. In life its whole body, including the venter, was black, except its yellowish throat. Its total length was about two meters. Two other individuals, an adult (RBINS 19455) and a subadult (RBINS 19456), were found by AP in Ntoum in 1987, freshly killed by locals. Their heads and forenecks were preserved. All three had a temporal formula of 1+1 on each side, a round pupil, and a vertebral row which is not widened. New dept record; in Estuaire this species was already reported from the depts of Komo (Pauwels and David, 2008) and Komo-Océan (Pauwels, Le Garff et al., 2016). The distribution of this large, conspicuous, diurnal snake is still surprisingly poorly known in Gabon.

Toxicodryas blandingii (Hallowell, 1844)
An adult Blanding's tree snake was killed in Feb. 1985 in a hut on the beach (ca. 0°28'48.8"N, 9°23'28.7"E) at La Sablière in the capital city Libreville, Estuaire Prov. Its head and foreneck were immediately preserved by AP (RBINS 19470). New locality (Pauwels and Vande weghe, 2008). This is one of the most commonly encountered snake species in the country, being found in all kinds of environments from savanna and primary forest to cities; however this is the first report from a Gabonese beach.

Toxicodryas pulverulenta (Fischer, 1856)
Villagers killed an adult individual in the palm leaves roof of a hut in Ntoum (ca. 0°22'26.4"N, 9°46'24.2"E), Komo-Mondah Dept, Estuaire Prov., in April 1987. Its head was preserved by AP (RBINS 19457). In life its color was uniformly beige. New prov. record (Pauwels and Vande weghe, 2008). Why this species is so much more rarely encountered than the congeneric and ubiquitous *Toxicodryas blandingii* remains a mystery.

Elapidae
Dendroaspis jamesoni jamesoni (Traill, 1843)
Two adult individuals (RBINS 19458-19459) were killed in Ntoum (ca. 0°22'26.4"N, 9°46'24.2"E), Komo-Mondah Dept, Estuaire Prov., in April and June 1987, respectively, and their heads preserved by AP. New dept record; the Jameson's mamba has only been recently recorded for the first time from Estuaire province (Pauwels, Chirio et al., 2017), and the distribution of this highly venomous but shy snake is still poorly documented in Gabon.

Naja melanoleuca Hallowell, 1857
In 1985 AP preserved the head and foreneck of an adult Black and white cobra (RBINS 19460) that had just been killed by villagers in Ntoum (ca. 0°22'26.4"N, 9°46'24.2"E), Komo-

Mondah Dept, Estuaire Prov. New locality record (Pauwels and Vande weghe, 2008). This cobra is by far the most commonly encountered highly venomous snake in Gabon, and is found in virtually all environments, from primary forests to cities and beaches.

Lamprophiidae
Mehelya poensis (Smith, 1847)
AP preserved the head and foreneck of an adult individual (RBINS 19461) killed in Ntoum (ca. 0°22'26.4"N, 9°46'24.2"E), Komo-Mondah Dept, Estuaire Prov., in 1985. A subadult individual (RBINS 19462), killed in Ntoum in 1983, was collected by G. Evers. Their dorsum was uniformly black in life. Their vertebral row is widened and shows a double keel. New dist. record (Pauwels and Vande weghe, 2008).

Polemon collaris (Peters, 1881)
An individual (RBINS 19463) was collected by AP in Ntoum (ca. 0°22'26.4"N, 9°46'24.2"E), Komo-Mondah Dept, Estuaire Prov., in 1985. Its ventral light color extends to the lower half of the lowest dorsal scale row. Its sixth supralabial is the longest; no supralabial contacts the parietals. The distance between the orbit and the upper lip is slightly less than twice the eye diameter. Its upper postocular is distinctly smaller than the lower one. Its temporal formula is 1+1 on each side. This rare snake had not yet been found in Estuaire Prov. (Pauwels and Vande weghe, 2008).

Natricidae
Natriciteres fuliginoides (Günther, 1858)
The adult individual RBINS 19464 was collected by G. Evers in Ntoum (ca. 0°22'26.4"N, 9°46'24.2"E), Komo-Mondah Dept, Estuaire Prov., in 1983. Its tail tip is missing, the tail is healed. New dept record (Pauwels and Vande weghe, 2008; Pauwels, Bamba Kaya et al., 2020). The locality Engong-Kouame listed by Pauwels and Vande weghe (2008: 227) lies in the nearby Komo Dept.

Pythonidae
Python sebae (Gmelin, 1789)
In 1987, AP witnessed the killing of an adult individual in Ntoum (ca. 0°22'26.4"N, 9°46'24.2"E), Komo-Mondah Dept, Estuaire Prov. The python had entered a chicken coop but was not able to go out because it had already eaten several chickens. Its skin was preserved (RBINS 19452), and shows a length of 275 cm; the head, neck and tail are missing, hence the actual total length is higher. New locality record within Estuaire (other localities in this province are listed by Pauwels and Vande weghe, 2008; Pauwels, Le Garff et al., 2016; Pauwels, Carlino et al., 2017; Pauwels, Chirio et al., 2017).

On 15 June 2017 AA photographed two Seba's pythons *in copula* in a bush (2°02'03.0"S 14°04'07.9"E; Figure 5) in the northern part of Batéké Plateau NP, Plateaux Dept, Haut-Ogooué Prov. On each of the photographs taken during the observation one can see a butterfly of the genus *Eurema* Hübner, 1819, most probably *E. brigitta* (Stoll, 1780) (Lepidoptera: Pieridae), flying around the cloaca of the pythons. The secretions generated during the copulation are probably highly attractive to the butterfly. This black and yellow butterfly

Figure 5. Two pythons *in copula* in Batéké Plateau National Park, Haut-Ogooué Prov., southeastern Gabon. Arrow points to the *Eurema cf. brigitta* butterfly near the tail tip. Photograph by A. Araldi.

was already recorded from Batéké Plateau NP (Vande weghe, 2010). Although pythons are commonly observed in Gabon, data on their local reproductive cycle are lacking. It is to be noted that it is also in June that observations were made on male-male combat in the presence of a female, in Wonga-Wongué Presidential Reserve in western Gabon (Pauwels, Chirio et al., 2017).

On 21 December 2018, RNM photographed a juvenile individual in the base camp of Precious Woods logging company in Bambidié (0°44'27.9"S, 12°58'31.0"E), Mouloundou Dept., in Ogooué-Lolo Prov. (Figure 6). New locality record (Pauwels, Le Garff et al., 2016; Pauwels, Gillet et al., 2018). The python had been beaten with sticks by the villagers and was dying when photographed. A photograph taken of its ventral side showed that it had no preventrals, 285 ventrals, a single anal scale and a complete, original tail with 67 divided subcaudals. Its umbilical scar was still visible on ventrals 206 to 211.

We take this opportunity to mention a python record overlooked in the synthesis by Pauwels and Vande weghe (2008). In a popular book on game hunting in Gabon, Pierre Weité (1953) described and illustrated with a photograph a case of predation by an adult python on a near-adult female *Kobus ellipsiprymnus*

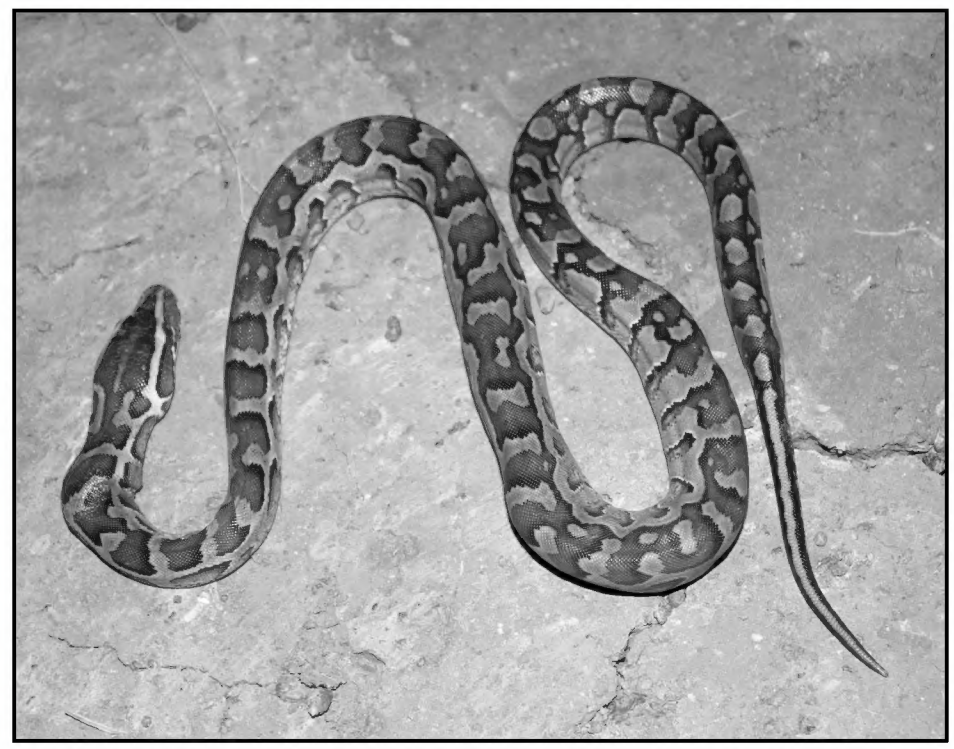

Figure 6. Dying juvenile *Python sebae* in Bambidié, Ogooué-Lolo Prov., central-eastern Gabon. Photograph by R. Ndonda Makemba.

Table 1. Morphological data for preserved snakes from Gabon. NA = not available/not assessed. For the other abbreviations see Materials and Methods.

Species / Specimen	Sex	SVL (mm)	TaL (mm)	DSR	PV+VEN	A	SC	SL	IL	Lor	PreO	SubO	PoO	AT
Boidae														
Calabaria reinhardtii														
RBINS 19466	NA	NA	NA	28-NA-NA, U	2+>16, U	NA	NA	8(3-4)/8(3-4)	9/9	1/1	1/1	0/0	2/2	NA
Colubridae														
Dasypeltis fasciata														
RBINS 19467	NA	NA	NA	25-NA-NA, K	0+>18, U	NA	NA	7(3-4)/7(3-4)	8(3)/8(3)	0/0	1/1	0/0	2/2	2/2
RBINS 19468	NA	NA	NA	25-NA-NA, K	0+>59, U	NA	NA	7(3-4)/7(3-4)	8(3)/8(3)	0/0	1/1	0/0	2/2	3/3
Hapsidophrys smaragdinus														
RBINS 19469	NA	NA	NA	15-NA-NA, K	2+>41, K	NA	NA	9(4-6)/9(4-6)	10(5)/9(5)	1/1	1/1	0/0	2/2	1/2
Philothamnus heterodermus														
RBINS 19453	NA	NA	NA	15-NA-NA, U	0+>36, K	NA	NA	8(5-6)/9(4-6)	8(4)/9(4)	2/1	1/1	0/0	2/2	2/2
Thrasops flavigularis														
RBINS 19454	NA	NA	NA	15-NA-NA, K	1+>12	NA	NA	8(4-5)/8(4-5)	10(4)/10(4)	1/1	1/1	0/0	3/3	1/1
RBINS 19455	NA	NA	NA	NA	0+>10	NA	NA	8(4-5)/8(4-5)	10(4)/10(4)	1/1	1/1	0/0	3/3	1/1
RBINS 19456	NA	NA	NA	NA	1+>7	NA	NA	8(4-5)/8(4-5)	10(4)/10(4)	1/1	1/1	0/0	3/3	1/1
Toxicodryas blandingii														
RBINS 19470	NA	NA	NA	NA	1+>10	NA	NA	9(4-6)/9(4-6	12(4)/12(4)	1/1	2/2	0/0	2/2	1/1
Toxicodryas pulverulenta														
RBINS 19457	NA	NA	NA	NA	1+>4	NA	NA	8(3-5)/8(3-5)	11(5)/12(5)	1/1	1/1	0/0	2/2	2/2
Elapidae														
Dendroaspis j. jamesoni														
RBINS 19458	NA	NA	NA	NA, U	1+>13	NA	NA	8(4)/8(4)	10(4)/10(4)	0/0	3/3	1/1	3/3	1/1
RBINS 19459	NA	NA	NA	NA, U	1+>8	NA	NA	8(4)/8(4)	9(3)/9(4)	0/0	3/3	1/1	3/3	2/2
Naja melanoleuca														
RBINS 19460	NA	NA	NA	27-NA-NA	2+>12	NA	NA	7(3-4)/7(3-4)	8(4)/8(4)	0/0	1/1	0/0	3/3	1/1
Lamprophiidae														
Mehelya poensis														
RBINS 19461	NA	NA	NA	17-NA-NA, K	2+>25, K	NA	NA	7(3-4)/7(3-4)	8(5)/8(5)	1/1	1/1	0/0	2/2	1/1
RBINS 19462	NA	NA	NA	17-NA-NA, K	2+>24, K	NA	NA	7(3-4)/7(3-4)	8(5)/8(5)	1/1	1/1	0/0	2/2	1/1
Polemon collaris														
RBINS 19463	♂	199	14	15-15-15, U	3+218, U	D	21, D, U	7(3-4)/7(3-4)	7(4)/7(4)	0/0	1/1	0/0	2/2	1/1
Natricidae														
Natriciteres fuliginoides														
RBINS 19464	NA	288	>88	17-17-15, U	1+126, U	S	>42, D, U	7(3-4)/8(4-5)	8(4)/10(5)	1/1	1/1	0/0	3/3	1/1
Viperidae														
Bitis gabonica														
RBINS 19465	NA	NA	NA	NA	2+>7, U	NA	NA	16(0)/15(0)	18(4)/17(5)	NA	NA	4 rows/ 4 rows	NA	NA
Causus maculatus														
RBINS 19471	NA	NA	NA	17-NA-NA, U	3+>24, U	NA	NA	6(0)/6(0)	9(4)/9(4)	1/1	2/2	1/1	2/2	2/2

(Mammalia: Bovidae) near Idiengui. According to the information provided by Weité and published botanical collection localities (see Walters et al., 2011), Idiengui lies on the road N1 between Ndendé and Mouila, within 20 km from Ndendé, in Dola Dept, Ngounié Prov. It most probably corresponds to the village currently called Yengué and formerly called Diengui (Pauwels, Carlino et al., 2019). Weité was attracted to the scene by the distress call of the Defassa waterbuck. According to him, the total length of the python was 560 cm, its midbody circumference 48 cm, and its weight exceeded 100 kgs (loc. cit.: 44, 106-109). In his book describing his experiences during ten years of hunting in Gabon, Georges Trial (1955) made only a single reference to reptiles (p. 179): "*Quant aux grands serpents non venimeux dont le python de Séba est le plus imposant - j'ai mesuré un sujet qui approchait de neuf mètres de long - ils sont incapables d'attaquer efficacement, et à plus forte raison d'engloutir, autre chose qu'un petit marcassin*" (our translation : "As to the large non-venomous snakes, among which the Seba's python is the most impressive—I measured an individual whose length was approaching nine meters—, they are not able to efficiently attack, and even more so swallow, anything larger than a young wild boar"). Unfortunately, no data on locality or circumstances was provided by Trial.

Weité (loc. cit.: 101-103) also mentioned having shot on 10 August 1950 three *Mecistops cataphractus* along a river between Azingo Lake and Lambaréné – thus in Rembo Azingo, Ogooué & Lacs Dept, Moyen-Ogooué Prov. According to

Weité, the total lengths of the crocodiles were about three, two and three meters, respectively. Weité mentioned other reptiles in his book, but without photograph and the information he provided was not precise enough to identify them.

Viperidae
Bitis gabonica (Duméril, Bibron & Duméril, 1854)
AP preserved the head (RBINS 19465) of a subadult individual killed in Ntoum (ca. 0°22'26.4"N, 9°46'24.2"E), Komo-Mondah Dept, Estuaire Prov., in 1985. The head shows 17/18 circumocular scales, a dorsal median black line, one black spot on each side of its postero-dorsal surface, and two black triangles under the eye on each side. New dept record (Pauwels and Vande weghe, 2008).

Causus maculatus (Hallowell, 1842)
An adult individual killed by a villager with a machete in Léconi (= Lékoni), Plateaux Dept, Haut-Ogooué Prov., was found by G. Rambaldi in October 1986. Its head and neck (RBINS 19471) were preserved. The dorsal surface of the head shows the typical V-shaped mark. New dept record. Within Haut-Ogooué Prov., this savanna-dwelling viper had been so far recorded from Lébombi-Léyou and Passa depts (Pauwels, Oger et al., 2018; Pauwels, Morelle et al., 2019).

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Literature Cited

Anonymous. 2018. Plusieurs objets archéologiques retrouvés dans une grotte sépulcrale dans la Ngounié. L'Union, 19 Dec. 2018:8.

Dowling, H. G. 1951. A proposed standard system of counting ventrals in snakes. British Journal of Herpetology 1(5):97-99.

Engelbrecht, H. M., W. R. Branch, E. Greenbaum, G. J. Alexander, K. Jackson, M. Burger, W. Conradie, C. Kusamba, A.-G. Zassi-Boulou and K. A. Tolley. 2018. Diversifying into the branches: Species boundaries in African green and bush snakes, *Philothamnus* (Serpentes: Colubridae). Molecular Phylogenetics and Evolution 130:357-365.

Maran, J., and O. S. G. Pauwels. 2005. Etat des connaissances sur les tortues continentales du Gabon: Distribution, écologie et conservation. Bulletin de l'Institut Royal des Sciences naturelles de Belgique 75:47-60.

Pauly, A. 1998. Hymenoptera Apoidea du Gabon. Annales Sciences Zoologiques, Musée Royal de l'Afrique Centrale, Tervuren 282:1-121.

Pauwels, O. S. G. 2016. Annexe 5. Liste des reptiles. Pp. 364-366. *In*: J. P. Vande weghe, P. Christy, M. Ducrocq, M. Lee, G. Vande weghe and O. S. G. Pauwels. Biodiversité des parcs nationaux et réserves du Gabon. 2. Espèces, écosystèmes et populations. Libreville, Gabon: Agence Nationale des Parcs Nationaux.

Pauwels, O. S. G., L. Bahaa-el-din, J.-L. Albert, P. Carlino, F. Giannuzzi, L. Chirio, J.-F. Gillet, E. Poirier and T. Stévart. 2018. Miscellanea Herpetologica Gabonica XIV. Bulletin of the Chicago Herpetological Society 53(9):185-190.

Pauwels, O. S. G., A. Bamba Kaya, L. Boundenga, P. Carlino, L. Chirio, M. J. Moreels, S. Morelle, B. Ngoubangoye, L. Pallemaerts and K. A. Abernethy. 2020. Miscellanea Herpetologica Gabonica XV. Bulletin of the Chicago Herpetological Society 55(3):54-60.

Pauwels, O. S. G., T. Biyogho Bi Essono II, P. Carlino, L. Chirio, B. Huijbregts, T. E. J. Leuteritz, D. Rousseaux, E. Tobi, C. Vigna and W. Van Neer. 2017. Miscellanea Herpetologica Gabonica VII. Bulletin of the Chicago Herpetological Society 52(1):1-7.

Pauwels, O. S. G., W. R. Branch and M. Burger. 2002. Reptiles of Loango National Park, Ogooué-Maritime Province, south-western Gabon. Hamadryad 29(1):115-127.

Pauwels, O. S. G., M. Burger, W. R. Branch, E. Tobi, J.-A. Yoga and E.-N. Mikolo. 2006. Reptiles du Complexe d'Aires Protégées de Gamba, sud-ouest du Gabon. Pp. 91-100. *In*: A. Alonso, M. E. Lee, P. Campbell, O. S. G. Pauwels and F. Dallmeier, editors, Gamba, Gabon: Biodiversité d'une forêt équatoriale africaine / Gamba, Gabon: Biodiversity of an equatorial African rainforest. Washington, D.C.: Bulletin of the Biological Society of Washington (12).

Pauwels, O. S. G., P. Carlino, L. Chirio, D. R. Daversa, J. Lips, R. Oslisly and O. Testa. 2019. Amphibians and reptiles found in caves in Gabon, western Equatorial Africa. Cave and Karst Science 46(1):3-12.

Pauwels, O. S. G., P. Carlino, L. Chirio, Q. Meunier, J. V. Okouyi Okouyi, C. Orbell, D. Rousseaux and O. Testa. 2017. Miscellanea Herpetologica Gabonica IX. Bulletin of the Chicago Herpetological Society 52(6):97-102.

Pauwels, O. S. G., L. Chirio, E. J. Neil, S. Berry, N. Texier and C. Rosin. 2017. Miscellanea Herpetologica Gabonica VIII. Bulletin of the Chicago Herpetological Society 52(3):41-46.

Pauwels, O. S. G., and P. David. 2008. Miscellanea Herpetologica Gabonica I. Hamadryad 32(1):13-18.

Pauwels, O. S. G., J.-F. Gillet, Y. G. Ongonwou Sonnet and L. Chirio. 2018. Miscellanea Herpetologica Gabonica XII. Bulletin of the Chicago Herpetological Society 53(5):105-110.

Pauwels, O. S. G., A. Kamdem Toham and C. Chimsunchart. 2002. Recherches sur l'herpétofaune du Massif du Chaillu, Gabon. Bulletin de l'Institut Royal des Sciences Naturelles de Belgique 72:47-57.

Pauwels, O. S. G., B. Le Garff, I. Ineich, P. Carlino, I. Melcore, L. Boundenga, C. Vigna, T. Stévart, K. Jeffery, C. Orbell, J.-B. Squarcini, J. P. Vande weghe and L. J. T. White. 2016. Miscellanea Herpetologica Gabonica V & VI. Bulletin of the Chicago Herpetological Society 51(11):177-185.

Pauwels, O. S. G., S. Morelle, J.-L. Albert, P. Carlino, N. Rahola and J.-F. Trape. 2019. New reptile records from Lékédi Park and Haut-Ogooué Province, southeastern Gabon. Amphibian & Reptile Conservation 13(1):143-161.

Pauwels, O. S. G., M. J. L. Oger and D. Meirte. 2018. Miscellanea Herpetologica Gabonica XIII. Bulletin of the Chicago Herpetological Society 53(7):145-151.

Pauwels, O. S. G., and J. P. Vande weghe. 2008. Reptiles du Gabon. Washington, D.C.: Smithsonian Institution.

Trial, G. 1955. Dix ans de chasse au Gabon. Paris: Crépin-Leblond & Cie (eds).

Vande weghe, G. R. 2010. Les papillons du Gabon. Libreville, Gabon: Wildlife Conservation Society.

Walters, G., G. Dauby, T. Stévart, S. Dessein, R. Niangadouma and O. Lachenaud. 2011. Novitates gabonenses 80. Additions and corrections to the Flora of Gabon. Edinburgh Journal of Botany 68(3):423-442.

Weité, P. 1953. Chasses en brousse africaine. Paris: Nouvelles Editions de la Toison d'Or.

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Observations of Two Possible Predators on the Eggs of the Eastern Gray Treefrog (*Hyla versicolor*)

Geoffrey R. Smith
Department of Biology
Denison University
Granville, OH 43023
smithg@denison.edu

A review of the palatability of amphibian eggs, hatchlings, and tadpoles found only one study on the palatability of Eastern Gray Treefrog, *Hyla versicolor*, eggs (Gunzburger and Travis, 2005). In addition, in his review of their biology, Dodd (2013) did not report any egg predators of *H. versicolor*. Smith and Smith (2015) found that Western Mosquitofish were not egg predators of *H. versicolor*, but do consume hatchlings and tadpoles. However, eggs of *H. versicolor* were eaten by *Notophthalmus viridescens* (Walters, 1975). Here I report two additional potential egg predators that may feed on *H. versicolor* eggs.

On 17 June 2019, I observed two different potential egg predators on recently laid egg masses of *Hyla versicolor*. These observations occurred in mesocosms established to examine colonization of experimental ponds by *H. versicolor* and aquatic insects in a fenced in area on the Denison University Biological Reserve, Granville, Licking County, Ohio. As part of this experiment, mesocosms were checked daily for egg masses and it was during one of these daily checks that I made these observations.

Dytiscid beetle larvae, probably *Laccophilus* sp. (due to the nature of the ongoing experiment the larvae were not collected or disturbed), were one of the potential egg predators. The beetle larvae could be seen in the egg clusters, apparently attacking the jelly surrounding the eggs (Figure 1A). I observed this behavior in more than one mesocosm; thus it appeared to be a specific behavior rather than an isolated random event. Dytiscid beetle larvae have not been reported to consume *H. versicolor* before. However, Resetarits (1998) found that dytiscid larvae (*Ilybius*

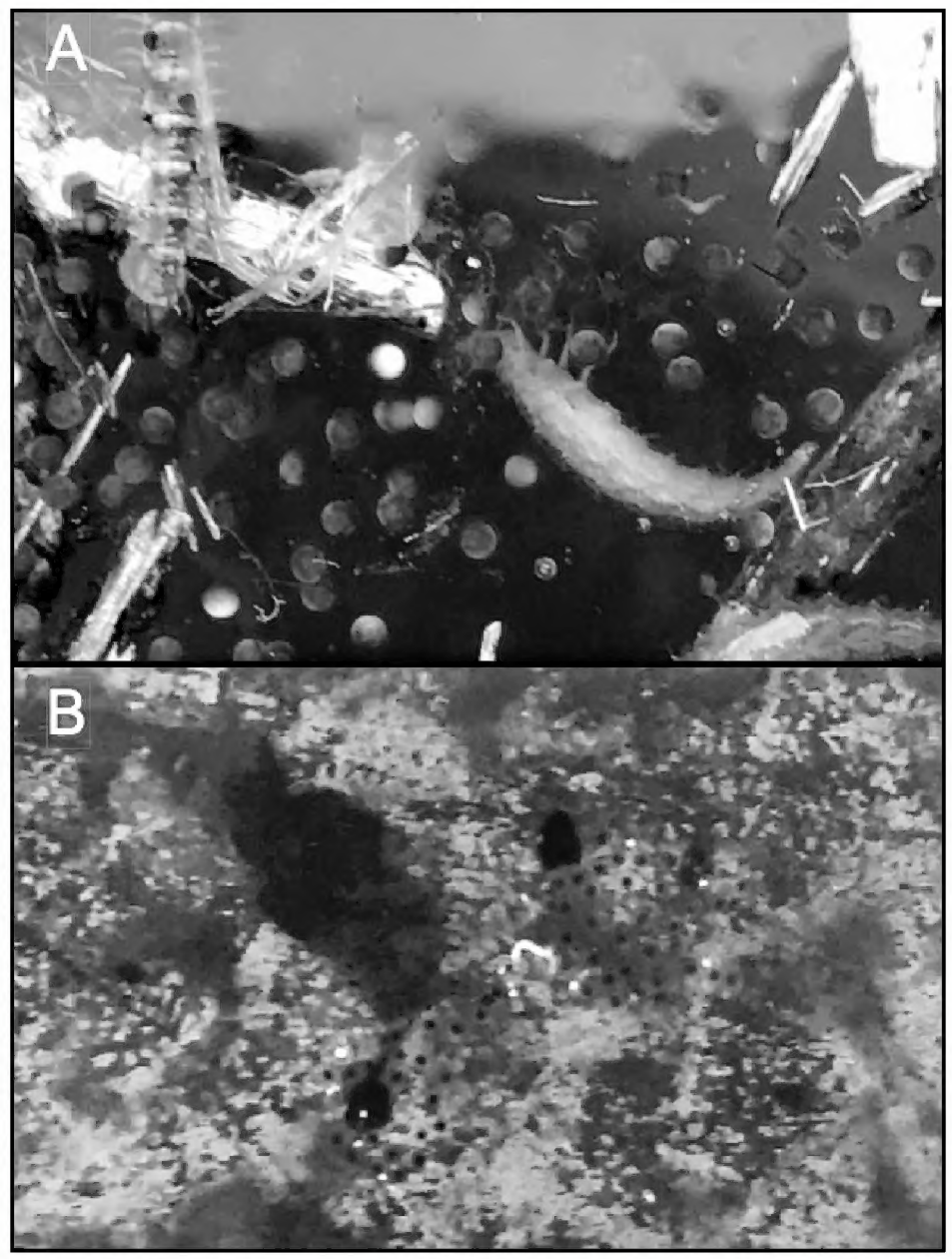

Figure 1. Photographs of two potential predators on the eggs of the Eastern Gray Treefrog, *Hyla versicolor*: **A**) dytiscid beetle larvae, and **B**) conspecific *H. versicolor* tadpoles.

sp.) reduced the survival of eggs of *H. chrysoscelis*, the sister species to *H. versicolor*, in 300 mL cups.

The second observation of potential egg predators involved *H. versicolor* tadpoles. On 17 June 2019 I observed several *H. versicolor* tadpoles grazing on the jelly surrounding the eggs of freshly laid *H. versicolor* eggs (Figure 1B). I observed this behavior in multiple mesocosms and on subsequent days of the experiment. A previous experiment found that later in the season, *H. versicolor* females avoided laying eggs in mesocosms with conspecific tadpoles (Smith and Harmon, 2019). This behavior was attributed to avoiding competition, but the observations I report here suggest the behavior may also help avoid cannibalism. Egg cannibalism by tadpoles has been observed other hylid frogs, including *Hyla geographica* (Magnusson and Hero, 1991), *H. pseudopuma* (Crump, 1983), *H. rosenbergi* (Kluge, 1981), and *H. boans* (Magnusson and Hero, 1991).

In neither case did I directly observe consumption of the egg itself; however, it appeared there was some attempt by both types of predators to consume either the egg or the egg jelly. The jelly coating on anuran eggs serves a variety of protective functions including providing protection from pH (Shu et al., 2015), chemical stressors (Marquis et al., 2006), and predators (Warkentin et al., 2006; Hayes et al., 2009) and so any disruption of that coating could affect the success of the egg even if the egg itself is not consumed. Indeed, anuran eggs from which the jelly coat has been removed are consumed more (Werschkul and Christensen, 1977) and have higher mortality when exposed to chemical stressors (Marquis et al., 2006) than eggs with intact jelly coats.

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Literature Cited

Crump, M. L. 1983. Opportunistic cannibalism by amphibian larvae in temporary aquatic environments. American Naturalist 121(2): 281-289.

Dodd, C. K. Jr. 2013. Frogs of the United States and Canada. Volume 1. Baltimore: Johns Hopkins University Press.

Gunzburger, M. S., and J. Travis. 2005. Critical literature review of the evidence for unpalatability of amphibian eggs and larvae. Journal of Herpetology 39(4):547-571.

Hayes, R. A., M. R. Crossland, M. Hagman, R. J. Capon and R. Shine. 2009. Ontogenetic variation in the chemical defenses of cane toads (*Bufo marinus*): Toxin profiles and effects on predators. Journal of Chemical Ecology 35(4):391-399.

Kluge, A. G. 1981. The life history, social organization, and parental behavior of *Hyla rosenbergi* Boulenger, a nest-building gladiator frog. Miscellaneous Publications, Museum of Zoology, University of Michigan 160:1-170.

Magnusson, W. E., and J.-M. Hero. 1991. Predation and the evolution of complex oviposition behavior in Amazon rainforest frogs. Oecologia 86(3):310-318.

Marquis, O., A. Millery, S. Guittonneau and C. Miaud. 2006. Toxicity of PAHs and jelly protection of eggs in the Common frog *Rana temporaria*. Amphibia–Reptilia 27(3):472-475.

Resetarits, W. J. Jr. 1998. Differential vulnerability of *Hyla chrysoscelis* eggs and hatchlings to larval insect predators. Journal of Herpetology 32(3):440-443.

Shu, L., M. J.-F. Suter, A. Laurila and K. Räsänen. 2015. Mechanistic bases of adaptive maternal effects: Egg jelly water balance mediates embryonic adaptation to acidity in *Rana arvalis*. Oecologia 179(3):617-628.

Smith, G. R., and J. J. Harmon. 2019. Differential oviposition and offspring success of gray treefrogs in the presence of an invasive fish. Ecosphere 10(2):e02612.

Smith, G. R., and L. E. Smith. 2015. Effects of Western Mosquitofish (*Gambusia affinis*) on tadpole production of Gray Treefrogs (*Hyla versicolor*). Herpetological Conservation and Biology 10(2):723-727.

Walters, B. 1975. Studies of interspecific predation within an amphibian community. Journal of Herpetology 9(3):267-279.

Warkentin, K. M., C. R. Buckley and K. A. Metcalf. 2006. Development of red-eyed treefrog eggs affects efficiency and choices of egg-foraging wasps. Animal Behaviour 71(2):417-425.

Werschkul, D. F., and M. T. Christensen. 1977. Differential predation by *Lepomis macrochirus* on the eggs and tadpoles of *Rana*. Herpetologica 33(2):237-241.

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Notes on the Herpetofauna of Western Mexico 23: Predation by a Pacific Coast Parrot Snake (*Leptophis diplotropis*) on a Milky Treefrog (*Trachycephalus typhonius*) in the municipality Huejutla de Reyes, Hidalgo, Mexico

Erika Sugey García Mata [1], Daniel Cruz-Sáenz [2], Andrés Rodríguez-López [2], José Orlando Ríos-Martínez [3], Luis Antonio Hernández-Dávila [3], David Lazcano [3] and Larry David Wilson [4]

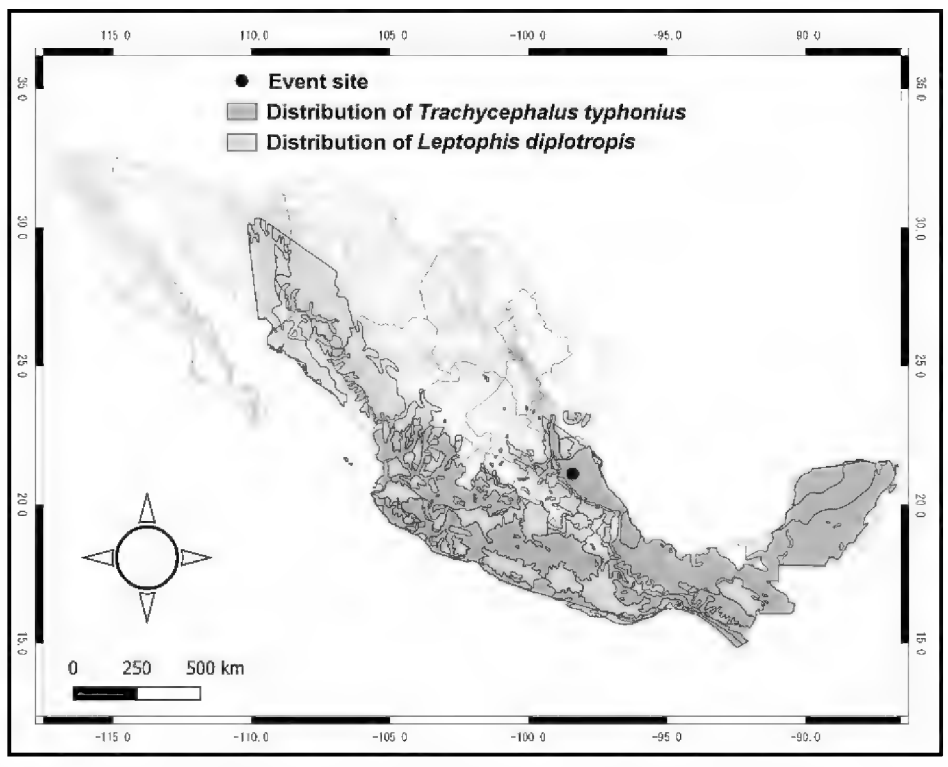
Abstract

During the course of an ornithological and herpetological survey in July of 2018 in the municipality of Huejutla de Reyes in the state of Hidalgo, Mexico, we observed a *Trachycephalus typhonius* (milky treefrog) being preyed upon by a *Leptophis diplotropis* (Pacific Coast parrot snake). This was an unexpected field observation, even though the distributions of these two species in Mexico broadly overlap.

Resumen

Durante el curso de unos estudios de la ornitología y herpetológica en el mes de julio de 2018 en el municipio de Huejutla de Reyes en el estado de Hidalgo, México, observamos un *Trachycephalus typhonius* (rana lechera) siendo presa de un *Leptophis diplotropis* (culebra perico gargantilla). Esta es una observación de campo inesperada, a pesar de que las distribuciones de estas dos especies en México se superponen ampliamente.

We conducted an ornithological survey in July 2018, near the locality "El Moreno" in the municipality of Huejutla de Reyes in the state of Hidalgo (21°6'48.07"N, 98°24'49.67"W; WGS84; elevation 227 m). This survey was conducted in a tropical deciduous forest that had also had aquatic and sub-aquatic vegetation species at several points within the study site. On 25 July 2018 we observed a Pacific Coast parrot snake, *Leptophis diplotropis*, initially resting on a branch. A milky treefrog, *Trachycephalus typhonius*, began to climb a contiguous branch of same shrub, and when the frog was close enough, the snake struck at it and began to eat it. This event occurred at 15:45 hrs and the snake took 120 minutes to eat the frog. The frog was not regurgitated.



Distribution map of the predator *Leptophis diplotropis* (Pacific Coast parrot snake) and the prey *Trachycephalus typhonius* (milky treefrog) in Mexico. Map by Andrés Rodríguez-López.

Background: *Trachycephalus typhonius* (Cope, 1877)

Trachycephalus typhonius is a widely distributed arboreal frog species, occurring from the lowlands of tropical Mexico to Chocoan Ecuador and western Venezuela (Lee, 2000; Ramirez-Bautista et al., 2014; Berriozabal-Islas et al., 2012; Lemos-Espinal and Dixon, 2013; Badillo-Saldaña, 2013; Luja et al., 2014; Woolrich-Piña et al., 2016; Frost, 2019). This frog occurs in diverse habitats, including dry and wet forests and artificial open areas such as plantations and even human housing. The species reproduces explosively at the beginning of the rainy season, after powerful rains. During the dry season, it has been found in bromeliads, hollows of trees, under the bark of trees, and at the base of leaves of banana plants. One of its common names (milky treefrog / *rana lechera*) is due to its ability to discharge, when molested, a white, thick and sticky substance that has toxic properties and can produce burning and inflammation if it comes in contact with the eyes or mucous membranes of the nose or mouth (Lee, 2000; Duellman, 2001; Ramírez-Bautista et al., 2014). When it rains, it is an abundant species that prefers the best preserved habitats, in forests with larger trees. It is active only during the rainy season (Duellman, 1970; La Marca et al., 2010). *Trachycephalus typhonius* is distributed in the Coastal Plain and Trans-Mexican Volcanic Belt bio-

1. Universidad de Guadalajara, Centro Universitario de Ciencias Biológicas y Agropecuarias Km. 15.5 Carretera Guadalajara-Nogales, Predio Las Agujas, A. P. 1-1919, Zapopan, Jalisco, C.P. 44101 México. sugey230987@hotmail.com

2 Universidad de Guadalajara, Centro de Estudios en Zoología, Centro Universitario de Ciencias Biológicas y Agropecuarias Km. 15.5 Carretera Guadalajara-Nogales, Predio Las Agujas, A. P. 1-1919, Zapopan, Jalisco, C.P. 44101 México. dcruzsaenz@gmail.com (DCS).

3.Universidad Autónoma de Nuevo León, Facultad de Ciencias Biológicas, Laboratorio de Herpetología, Apartado Postal # 157, San Nicolás de los Garza, Nuevo León, C.P. 66450 México. imantodes52@hotmail.com (DL).

4. Centro Zamorano de Biodiversidad, Escuela Agrícola Panamericana Zamorano, Departamento de Francisco Morazán, Honduras; 1350 Pelican Court, Homestead, Florida 33035, USA. bufodoc@aol.com.

Trachycephalus typhonius. Photograph by Daniel Cruz-Saenz.

geographic regions. Its conservation status is: L(4) = Low vul nerability species (Wilson et al., 2013); LC = Least Concern (IUCN, 2018); NS = no status (SEMARNAT, 2010).

Probably due to its noxious skin secretions, few predators have been reported. In addition to *Leptophis diplotropis*, two other snake species, *Leptophis ahaetulla* (green parrot snake / *ranera perico*) and *Liophis poecilogyrus*, have been reported to prey upon adult *T. typhonius* (as *Phrynohyas venulosa*) (Prado, 2003; Silva Jr. et al., 2003; Albuquerque and Di-Bernardo, 2005). Landgref-Filho et al. (2012) observed predation of *T.*

Leptophis diplotropis (Pacific Coast parrot snake) feeding on *Trachycephalus typhonius* (milky treefrog) in the municipality Huejutla de Reyes, Hidalgo, Mexico. Photograph by Erika Sugey García-Mata.

Leptophis diplotropis. Photograph by Aldo Dávalos-Martínez.

typhonius by *Leptodactylus labyrinthicus* (South American pepper frog / *rana pimienta*). During a fieldtrip in "El Chaco National Park" (Alto Paraguay department, Paraguay), at the base of Cerro León a juvenile male *Chacophrys pierottii* (Chaco horned frog / *escuercito*) was observed feeding on a juvenile *T. typhonius* near a temporary pond formed by recent heavy rains (Bueno Villafañe et al., 2017).

Toxins in amphibians may be composed of amines, peptides, steroids, alkaloids, and other compounds (Daly, 1995; Vitt and Caldwell, 2009). The milky secretions in *Trachycephalus typhonius* consist of poisonous secretions from granular glands in the skin: the secretion is insoluble in water and discharged as a white, sticky substance composed of various poisonous alkaloids (Holder, 2016). These glands are believed to have evolved as a mechanism of defense, and they secrete alkaloids that are lethal to the predator (Cortazares-Field, 2011). This milky secretion also has impressive adhesive properties (Vitt and Caldwell, 2009).

Background: *Leptophis diplotropis* (Günter, 1872)

The Pacific Coast Parrot Snake, *Leptophis diplotropis*, is a Mexican endemic colubrid with a distribution extending from Sonora and southwestern Chihuahua southward along the Pacific coast to Oaxaca, and into several states in central Mexico, including Morelos, Puebla, and Hidalgo. This species inhabits tropical dry forest, semi-deciduous forest, mangrove forest, oak forest, and wet forest, and also is found in disturbed areas. It is a diurnal treesnake, but also can be found on the ground at elevations from sea level to 2500 m. It is considered abundant throughout its range. *Leptophis diplotropis* is distributed in the following biogeographic regions: Coastal Plain, Sierra Madre Occidental, Trans-Mexican Volcanic Belt, and Nayarit Islands (Canseco-Márquez and Gutierrez-Mayén, 2010; Berriozabal-Islas et al., 2012; Ramirez-Bautista et al., 2014). Its conservation status is as follows: H (14) High vulnerability species (Wilson et al., 2013); LC = Least Concern (IUCN, 2018); A = threatened (SEMARNAT, 2010).

Leptophis diplotropis is medium-sized snake, up to 140 cm in total length. It is green or blue-green in color, with a very thin

body and a large elongated head. The eyes are large, with a round pupil. This snake has a diet consisting of frogs, birds and small lizards. It is oviparous (Ramírez Bautista et al., 2004).

To our knowledge, little information has been published on the life history of this species, particularly with regard to its dietary habits. Based on an examination of stomach contents in different individuals, they are known to consume different species of frogs (*Agalychnis dacnicolor, Lithobates berlandieri, Smilisca baudinii*, *Smilisca fodiens,* and *Tlalocohyla smithii*) and lizards (*Phyllodactylus tuberculosus*) (Oliver, 1948; Hardy and McDiarmid, 1969; Hernández-Ríos and Cruzado-Cortés, 2011; Calderón-Patrón et al., 2014; González-Solórzano and Escobedo-Galván, 2015). The first report of a *Trachycephalus typhonius* being consumed by *Leptophis diplotropis* was provided by Escalante-Pasos et al. (2017).

Brief Description of the Study Site

The municipality in which the observation was made has an altitude gradient of 100–1400 masl, a terrestrial extension of 394.05 km^2, representing 1.89% of the part of the Huasteca Hidalguense, a region characterized as being very hot and humid all year around. This municipality is one of 84 in the state.

The tropical deciduous forest in which the observation was made lies within the elevational gradient of 200–1000 masl. The forest is characterized by the following tree species *Brosimum alicastrum* (breadnut / *ojite*), *Protium copal* (copal tree /*copal*), *Bursera simaruba* (copperwood / *chaca*) and *Cedrela odorata* (Spanish cedar / *cedro americano*) (Puig, 1976; Rzedowski, 1983; INEGI, 1992; Challenger, 1998; Villavicencio Nieto and Pérez Escandón, 2010).

The aquatic and subaquatic vegetation in the region is characterized by the presence of *Platanus mexicana* (Mexican Sycamore / *álamo blanco*) and *Salix humboldtiana* (Humboldt's willow / *sauce criollo*). In some sites (*islotes*, or islets) one can find *Tecoma stans* (yellow trumpetbush / *trompa de oro*), *Costus pictus* (painted spiral ginger /*caña agria*) and *Equisetum* sp. (horsetail / *cola de caballo*)

Discussion and Conclusions

Sequestration of toxins has been defined as the evolved retention of specific compounds within the tissues of a species, usually not retained by the ancestors of that taxon, which serves a function that confers a selective advantage (Savitzky et al., 2012).The snakes of the family Natricidae have evolved defenses against harmful compounds or toxic agents of amphibians. A known case of the accumulation of toxins involves populations of snakes of the genus *Thamnophis* occurring in western North America that consume newts of the genus *Taricha* whose skins contain tetrodotoxin (TTX), a potent neurotoxin (Brodie, 1968; Brodie and Brodie, 1990, 1999; Mebs, 2001; Brodie et al., 2002; Brodie et al., 2005; Zimmer and Ferrer, 2007). However, this resistance is due to mutations in the gene that encodes for sodium channels, resulting in a phenotype that functions even when the snakes are exposed to the TTX. In the areas where highly toxic newts are abundant, snakes with the modified gene survive better than other individuals, leaving offspring that inherit the allele for TTX-resistant for sodium-potassium-ATPase. TTX resistance has evolved independently several times within *Thamnophis* species in western North America through different mutations in the same gene (Sadava et al., 2009; Mohammadi et al., 2016). This snake species temporarily accumulates TTX in the liver and kidneys (Williams et al., 2004).

A more complex example of toxin sequestration occurs in the Asian natricid *Rhabdophis triginus*, which has a series of defensive structures known as nuchal skin glands on its neck. Studies have documented the presence of toxins in these glands (bufadienolides) similar to the cardiotonic steroids found in toads (Mori, 2004; Mori et al., 2012). This snake's diet consists of anurans, including members of the Bufonidae. It has been demonstrated that these snakes obtain their toxins from their diet (Hutchinson et al., 2007). These nuchal glands seem to work for storage and supply of these steroid toxins (Mori et al., 2012).

Leptophis diplotrophis belongs to the family Colubridae. There is no documentation of the effect the chemical composition of the milky secretions produced by *Trachycephalus typhonius* has on this snake, so we cannot infer what happens after the snake consumes this toxic species. Does it absorb these unknown toxicants to use then for its own defensive strategies, as do some natricids? Or does it not obtain that sort of benefit from this source of food? We need in more studies to understand this complex predator-prey interaction. Toxin sequestration has been shown in unrelated species of snakes and should be investigated in the genus *Leptophis*.

Reflections

Understanding the chemistry of prey-predator interactions in this species and many others should be investigated before their populations collapse due to habitat destruction, contamination, climate change and anthropogenic factors.

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Literature Cited

Albuquerque, N. R., and M. Di-Bernardo. 2005. Natural history notes. *Leptophis ahaetulla marginatus* (Southern green parrot snake). Diet. Herpetological Review 36(3):325.

Badillo-Saldaña, L.M. 2013. Analisis de la herpetofauna en zonas conservadas y perturbadas del bosque tropical y bosque mesófilo en Tepehuacán de Guerreo, Hidalgo, Mexico. Unpublished licenciate thesis. Universidad Autónoma de Estado de Hidalgo. 188 pp.

Berriozabal-Islas, C., A. Ramírez-Bautista, L. Badillo-Saldaña and R.Cruz-Elizalde. 2012. New record of the snake *Leptophis diplotropis* (Günther, 1872, Squamata: Colubridae) from Hidalgo State, México. Check List 8(6):1370-1372.

Brodie, E. D., Jr. 1968 . Investigations on the skin toxin of the adult rough-skinned newt, *Taricha granulosa*. Copeia 1968(2):307-313.

Brodie, E. D., III., and E. D. Brodie, Jr. 1990. Tetrodotoxin resistance in garter snakes: An evolutionary response of predators to dangerous prey. Evolution 44(3):651-659.

Brodie, E. D., Ill., and E. D. Brodie, Jr. 1999. Predator-prey arms races: Asymmetrical selection on predators and prey may be reduced when prey are dangerous. BioScience 49(7):557-568.

Brodie, E. D., Ill, C. R. Feldman, C. T. Hanifin, J. E. Motychak, D. G. Mulcahy, B. L. Williams and E. D. Brodie, Jr. 2005. Parallel arms races between garter snakes and newts involving tetrodotoxin as the phenotypic interface of coevolution. Journal of Chemical Ecology 31(2):343-356.

Brodie, E. D., Jr., B. J. Ridenhour and E. D. Brodie III. 2002. The evolutionary response of predators to dangerous prey: Hotspots and coldspots in the geographic mosaic of coevolution between garter snakes and newts. Evolution 56(10):2067-2082.

Bueno Villafañe, D., H. Cabral Beconi and A. Lesterhuis. 2017. Predation of *Trachycephalus typhonius* (Linnaeus, 1758) (Anura: Hylidae) by a juvenile *Chacophrys pierottii* (Vellard, 1948) (Anura: Ceratophryidae) in the Paraguayan Chaco. Cuaderno Herpetológico 31(1): 23-24.

Calderón-Patrón, J. M., O. M. Jacinto Jiménez and M. Cruz García. 2014. Natural history notes. *Leptophis diplotropis* (Pacific Coast Parrot Snake). Diet. Herpetological Review 45(3):517-518.

Canseco-Márquez, L., and M. G. Gutiérrez-Mayén. 2010. Anfibios y reptiles del Valle de Tehuacán-Cuicatlán. Comisión Nacional Para el Conocimiento y Uso de la Biodiversidad. Fundación Para La Reserva de La Biosfera Cuicatlán A.C. and Benemérita Universidad Autónoma de Puebla.

Challenger, A. 1998. Utilización y conservación de los ecosistemas terrestres de México: Pasado, presente y futuro. México, D.F.: CONABIO (Comisión Nacional para el Conocimiento y Uso de la Biodiversidad).

Cortazares-Field, J. 2011. Envenenamiento por contacto directo con ranas venenosas. Boletín Clínico del Hospital Infantil de Sonora 28(1):38-42.

Daly, J. W. 1995. The chemistry of poisons in amphibian skin. Proceedings of the National Academy Sciences 92:9-13.

Duellman, W. E. 1970. The hylid frogs of Middle America. Monograph of the Museum of Natural History, University of Kansas 1:1-753.

————. 2001. The hylid frogs of Middle America. SSAR Contributions to Herpetology, Volume 18.

Escalante-Pasos, J. A., L. Olguín-Hernández, A. Vernouillet, J. E. Verdugo-Molina and J. R. López-Castillo. 2017. Nature notes. *Leptophis diplotropis* (Günther, 1872). Diet. Mesoamerican Herpetology 4(2):433-435.

González-Solórzano, M., and A. H. Escobedo-Galván. 2015. Nature notes. *Leptophis diplotropis*. Diet. Mesoamerican Herpetology 2(4): 524-525.

Hardy, L. M., and R. W. McDiarmid. 1969. The amphibians and reptiles of Sinaloa, México. University of Kansas Publications, Museum of Natural History 18(3):39-252.

Hernández-Ríos, A., and J. Cruzado-Cortés. 2011. Natural history notes. *Leptophis diplotropis* (Pacific Coast Parrot Snake). Diet. Herpetological Review 42(2):292-293.

Holder, G. 2016. The online guide to the animals of Trinidad and Tobago: Diversity. *Trachycephalus typhonius* (Warty Tree Frog). <https://sta.uwi.edu/fst/lifesciences/sites/default/files/lifesciences/documents/ogatt/Trachycephalus_typhonius%20-%20Warty%20Tree%20Frog.pdf>.

Hutchinson, D. A., A. Mori, A. H. Savitzky, G. M. Burghardt, X. Wu, J. Meinwald and F. C. Schroeder. 2007. Dietary sequestration of defensive steroids in nuchal glands of the Asian snake *Rhabdophis tigrinus*. Proceedings of National Academy of Sciences 104: 2265-2270.

INEGI (Instituto Nacional de Estadística, Geografía e Informática). 1992. Síntesis geográfica del estado de Hidalgo. <http://internet.contenidos.inegi.org.mx/contenidos/productos/prod_serv/contenidos/espanol/bvinegi/productos/historicos/2104/702825220945/702825220945_1.pdf>

IUCN. 2018. The IUCN Red List of threatened species. <www.iucnredlist.org> [accessed 28 August 2018].

La Marca, E., C. Azevedo-Ramos, N. Scott, L. Aquino, D. Silvano, L. A. Coloma, S. Ron, J. Faivovich, G. Santos-Barrera, F. Solís, R. Ibáñez, F. Bolaños, L. D. Wilson, J. Hardy and P. Ponce. 2010. *Trachycephalus typhonius* (errata version published in 2016). The IUCN Red List of Threatened Species 2010: e.T55824A95508779. <https://dx.doi.org/10.2305/IUCN.UK.2010-2.RLTS.T55824A11373788.en>

Landgref-Filho, P., M. Uetanabaro, I. K. Mori, D. L. Hokama and C. Aoki. 2012. Natural history notes. *Trachycephalus typhonius* (Milky treefrog). Predation. Herpetological Review 43(3):472.

Lee, J. C. 2000. A field guide to the amphibians and reptiles of the Maya World, the lowlands of Mexico, northern Guatemala and Belize. Ithaca, New York: Comstock Publishing Associate and Cornell University Press.

Lemos-Espinal, J. A., and J. R. Dixon. 2013. Amphibians and reptiles of San Luis Potosí. Eagle Mountain, Utah: Eagle Mountain Publishing.

Luja, V. H., I. T. Ahumada-Carrillo, P. Ponce-Campos and E. Figueroa-Esquivel. 2014. Checklist of amphibians of Nayarit, western Mexico. Check List 10(6):1336-1341.

Mebs, D. 2001. Toxicity in animals. Trends in evolution? Toxicon 39(1):87-96.

Mohammadi, S., Z. Gompert, J. Gonzalez, H. Takeuchi, A. Mori and A. H. Savitzky. 2016. Toxin-resistant isoforms of Na+/K+-ATPase in snakes do not closely track dietary specialization on toads. Proceedings of the Royal Society B 283:2016-2111.

Mori, A. 2004. Another "poisonous" gland in snakes: Function, ultrastructure, and physiology of the nuchal glands of *Rhabdophis tigrinus*. Bulletin of the Herpetological Society of Japan 2004(1):29-33. [In Japanese]

Mori, A., G. M. Burghardt., A. Savitzky., K. Roberts., D. Hutchinson and R. Goris. 2012. Nuchal glands: A novel defensive system in snakes. Chemoecology 22(3):187-198.

Oliver, J. A. 1948. The relationships and zoogeography of the genus *Thalerophis* Oliver. Bulletin of the American Museum of Natural History 92:157–280.

Prado, C. P. A. 2003. Natural history notes. *Leptodactylus chaquensis* (NCN), *Pseudis paradoxa* (Paradox frog), and *Phrynohyas venulosa* (Veined treefrog). Predation. Herpetological Review 34(3):231-233.

Puig, H. 1976. Végétation de la Huasteca, Mexique. Mission Archeologique et Ethnologique Française au Mexique.

Ramírez-Bautista, A., U. Hernández-Salinas, R. Cruz-Elizalde, C. Berriozabal-Isla, D. Lara-Tufiño, I. Goyenechea Mayer-Goyenechea and J. M. Castillo-Cerón. 2014. Los anfibios y reptiles de Hidalgo, Mexico. Diversidad, biogeografía y conservación. Sociedad Herpetológica Mexicana.

Ramírez Bautista, A., F. Mendoza Quijano and M. C. Arizmendi. 2004. *Leptophis diplotropis*. Estatus y conservación de algunos anfibios y reptiles de México. Facultad de Estudios Superiores Iztacala, Unidad de Biología, Tecnología y Prototipos (UBIPRO), Universidad Nacional Autónoma de México. Bases de datos SNIB-CONABIO. Proyecto W043. México. D.F.

Rzedowski, J. 1983. Vegetación de México. México D.F.: Limusa Editorial.

Sadava, D., G. Heller, G. Orians, W. Purves and D. Hillis. 2009. Vida, la ciencia de la biología. Buenos Aires: Editorial Médica Panamericana.

Savitzky, A. H., A. Mori., D. A. Hutchinson. R. A. Saporito., G. M. Burghardt., H. B. Lillywhite and J. Meinwald. 2012. Sequestered defensive toxins in tetrapod vertebrates: Principles, patterns and prospects for future studies. Chemoecology 22(3):141-158.

SEMARNAT (Secretaría del Medio Ambiente y Recursos Naturales). 2010. Norma Oficial Mexicana NOM-059-SEMARNAT-2010. Protección ambiental—Especies nativas de México de flora y fauna silvestres—Categorías de riesgo y especificaciones para su inclusión, exclusión o cambio—Lista de especies en riesgo. Diario Oficial de la Federación, 3 de Agosto de 2017.

Silva Jr., N. J., I. França e Souza, W. V. Silva and H. L. R. Silva. 2003. Natural history notes. *Liophis poecilogyrus* (Trash-snake). Diet. Herpetological Review 34(1):69-70.

Villavicencio Nieto, M. A., and B. E. Pérez Escandón. 2010. Vegetación e inventario de la flora útil de la Huasteca y la zona Otomí-Tepehua de Hidalgo. Ciencia Universitaria (1):23-33.

Vitt, L. J., and J. P. Caldwell. 2009. Herpetology: An introductory biology of amphibians and reptiles, third edition. New York: Academic Press.

Williams, B. L., E. D. Brodie Jr. and E. D. Brodie III. 2004. A resistant predator and its toxic prey: Persistence of newt toxin leads to poisonous (not venomous) snakes. Journal of Chemical Ecology 30(10):1901-1919.

Woolrich-Piña, G. A., P. Ponce-Campos, J. Loc-Barragán, J. P. Ramírez-Silva, V. Mata-Silva, J. D. Johnson, E. García Padilla and L. D. Wilson. 2016. The herpetofauna of Nayarit, Mexico: Composition, distribution, and conservation. Mesoamerican Herpetology 3(2):376-448.

Zimmer, R. K., and R. P. Ferrer. 2007. Neuroecology, chemical defense, and the keystone species concept. Biological Bulletin 213(3): 208-225.

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The Great Action Jackson Coachwhip Capers

Roger A. Repp
9044 N. Valgrind Lane
Tucson, AZ 85743
repproger22@gmail.com

The author on Canadian herpetologist Kate Jackson: "A snake on the run brings about a fierce, predatory look upon her visage, and her gray eyes narrow into slits. She then morphs into an out-of-control lioness, and one best not try to get between her and that snake!" From: "Badgers? We don't need no stinking Badgers!" (Bulletin of the Chicago Herpetological Society, January 2018, page 23).

Let's lead off by talking a little about the instinct to chase. It is apparent in man and beast alike. Any expert on large, fast-moving predatory animals will tell you never to run away from them when confronted. Yes, the setup for a chase is in perfect harmony with millions of years of evolution that is buried in the medullas of carnivorous minds—even if they aren't hungry. To varying degrees, most herpetologists also display this instinct to chase. We want to chase, and we want to grab—even if we don't necessarily want to do anything special with the animal that we are chasing or grabbing. My friend Kate Jackson is the embodiment of the previous sentence. Were it not for the chase and grab, she likely would have become a stamp collector, or a librarian. I say these things because I am moving us in the direction of my earliest association with Kate. She is a famous herpetologist/author who, at the time I met her, was working out of the University of Toronto. Within the first ten minutes of meeting her, she told me that to her, the single most exciting aspect of being a herpetologist was chasing and grabbing. Running down a fleeing snake and grabbing it was the very essence of her being. When doing this sort of thing, she felt whole, and she felt complete. When engaged in the chase, her every step carries her along the pathway of her bliss. And on the third day of her first visit to Arizona in 2004, I witnessed her engage in a high-speed pursuit of a Coachwhip (*Masticophis flagellum*). In a lifetime of watching people catch snakes, never have I seen *anything* that compares to her and this particular Coachwhip.

The one thing that this author has to keep reminding himself about is the fact that you don't all live in Arizona. Hence, many of you may not be familiar with the wily antics of a snake simply known as the Coachwhip. As far as the name goes, that's it! They are not called the "Coachwhip Snake." If they were, some jackass would probably toss a hyphen in there, and it would be called the "Coach-whipped Snake." Ick! I can only assure you that if you lived in these parts, you would be *very* familiar with the Coachwhip. You would be like all the rest of us, and have more than one story to share about them. In Arizona, when standing in a group of herpers at a social gathering, if the subject of Coachwhips is broached for any reason, one can count on a lively discussion ensuing. Most will tell the story of one of their encounters with the snake—usually the first one they captured. It is hard *not* to do that. And nearly all the stories of personally capturing one culminate with a bite delivered to ye old snot-locker. Yeah, it just isn't a good Coachwhip story if *somebody* doesn't get nailed on the nose. I have one of those stories myself, but I will save it. No, when I think of fantastic captures of *any* snake, Coachwhip or otherwise, the great Action Jackson Coachwhip caper is the first one to come to mind.

The Kate Jackson Coachwhip capture story compares favorably with the story line of a children's book written by Helen Bannerman. This author will not even repeat the title of said children's book, lest he be branded as a racist. (I *can't* be held responsible for the children's books our teachers read us while we were being raised and educated in Twinkie-land!) I will only say that the last word of the title of this book was also at one time the name of the number one family restaurant chain in the USA. And it was the name of that restaurant chain that caused its own demise. Why would somebody name a breakfast joint after a boy who legendarily ate 169 pancakes? Hmmm, let me ponder that notion. Meanwhile, that was the very end of this particular children's storybook. A kid eats 169 pancakes—the end. What a weird way to end a story! But I guess the author had no choice but to end it there. If she had continued even one page further in her little picture book, the greatest bowel movement in the history of mankind would have been chronicled. That would have made for a much better ending! But as it stands—and has stood for over 125 years—a kid eats 169 pancakes, and that's the end of the story. How ridiculous! Of course, who am I to say anything about an author who actually made money off writing something? By now, the less patient among you might be asking: "How does a kid eating 169 pancakes relate to the great Action Jackson Coachwhip caper?" You are quite right to ask. Near the end of the story, the kid instigates trouble between a gang of tigers. He gets these tigers so riled up that they chase each other 'round and 'round the bushes. The speed of the chase accelerates until warp tiger speed is achieved. They move so fast for so long that they melt into butter. Yup—it *could* happen! The kid then scoops up the butter, puts it all into a big tub, and carries it to his village. That butter is used to cook up the 169 pancakes mentioned earlier. But think *not* of the butter. Think only of those tigers going 'round and 'round the bushes. That is much like the chase between herpetologist and snake about to be described.

Cutting to the chase—we cut to the chase. On the early evening of 10 August 2004, we were barreling northward on a narrow but well-graded dirt road. We were in my gritty little Toyota Tacoma two-door pickup truck. I was driving, and Kate was riding shotgun. Unbeknownst to us, as we were whizzing northbound, a meter-long Coachwhip was zooming eastbound. The trajectory and timing of man, woman and snake were all such that a flash of black, tan and pink would soon occupy the same little corner of the world together. At 1902 hours, that which was traveling east jetted across the road in front of that which was going north. We had all of two seconds to admire the view. The brakes were hastily applied as this happened, causing the truck to slide to a stop. A dust cloud the approximate size of

a Himalayan avalanche immediately engulfed us. By the time it cleared enough to see anything, it was noted that the shotgun seat was empty, and the passenger side door had been flung wide open. Knowing how hopeless the situation was going to be, I flung open my door, and sprinted back to the point where the snake had last been seen.

Under normal circumstances, the fleeing snake would never have been seen again. The usual conclusion to such an event is that the snake dives into a hole under a vegetative mass and disappears. For whatever reason, this Coachwhip behaved in very atypical fashion. Kate's quarry had been following what I call a mini-wash as it darted in front of us. Said mini-wash was roughly two meters in width, and was flanked on either side by gently sloping soil berms that were in turn peppered with various forms of Sonoran Desert vegetation. The north side of the wash was neatly lined with several three- to four-meter-tall palo verde trees that extended a length of perhaps 30 meters in eastward fashion. A three-meter-wide break between this little forest and the next batch of shrubbery created an opening of sorts. This little palo verde forest was perhaps 15 meters wide, and the shade-line on the north, shady side of the thicket assured that yet another natural pathway about two meters wide was created. The west edge of the little forest had another natural pathway between it and a lone palo verde tree that was so close to our road that the canopy actually extended over the eastern edge of it. The inner workings of the mini-forest along the mini-wash were stuffed full of a barrage of harsh desert shrubbery. There was hackberry, wolfberry, creosote, and several varieties of cholla, all hodge-podged together in the form of an impenetrable vegetative fortress. If one were to take this mini-forest and plop it along the first base line of a baseball field, it would roughly fill half of the infield. The south side of it would reach from home plate to first base, the east side would go halfway to second, the north side would go to the third base line, and the west side would reach home plate. There is of course a reason for describing this arena so thoroughly. The last sentence of the previous paragraph began with "Knowing how hopeless the situation was going to be . . . " That sentence was based on the knowledge that ninety-nine times out of a hundred, once a fast-moving Coachwhip crosses a road in front of a moving vehicle, said Coachwhip will evaporate into or under the landscape without being seen again. But this one was that one in a hundred that did not choose to immediately vanish from sight. By the time I got to where the snake had crossed the road, the snake *and* Kate had *both* vanished! While moving at top speed myself, I beheld the narrow, zig-zagging snake track in the sand, with the widely-spaced boot prints of Kate following behind. I chased these tracks to the eastern edge of the thicket, and lost them for a split second. About the time I noticed that both sets of tracks hooked left at the end of the thicket, I heard the thudding of feet rapidly approaching behind me. And then I heard a voice scream: "*Roger! Get the eff out of my way!*" (That's right, she addressed *me* in this abrupt fashion, using the foo foo word in the process. Herpers of either sex can be downright rude when chasing an escaping snake!) I turned to see that Coachwhip sizzling straight at me, with a thoroughly jacked up "action Jackson" hot on its tail. I avoided a collision by stepping to one side, and both the snake and Kate rounded first and hooked that left heading for our imaginary second base. Once again, halfway to second base they jetted, and disappeared from sight as they hooked left and headed for the third base line. And less than thirty seconds later, both the snake *and* Kate were heading straight for me again. But this time, I moved well out of the way, and in so doing, avoided being cussed and trampled by the pugnacious little five-foot-nothing Canuck as she blew by me again. As they rounded first again, I suddenly began to realize how much *fun* this was getting to be! And then, right in the middle of this "what fun" epiphany came the sound of a blaring horn. Said blaring horn was emanating from the enormous Ford F-250 pickup truck that was now stuck behind my truck. We had left my tiny Toyota Tacoma pickup truck in a state where both doors were flung wide open. As tiny as that truck was, I had managed to park it in a such fashion that it blocked the entire road! For the second time in less than two minutes this evening, the foo foo word was directed at my person. This time, I was foo fooed by the two occupants of the mammoth truck that my truck was blocking. They both had cowboy hats on—go figure. Real cowboys have no time to go around foo fooing respectable citizenry like me. They are too busy shouting things like "head 'em up, move 'em out!" Or, "we need to head 'em off at the pass" to be bothered by the likes of me. Nah, these guys were not *real* cowboys. They were merely two of many rude, wannabe cowboy-hat-wearing-shit-kickers who inhabit the cabs of gas-guzzling Republican-mobiles such as this one. What a time for those idiots to be on my road! If anybody ought to have been foo fooed, it was them. They were interfering with *my* ability to witness the snake chase of the century. So, I gave them a sheepish wave and a grin, and pulled my sensibly-sized truck out of their way. I greatly feared that the chase would be over by the time I got back to it. But as I once again reestablished my spectator's position in the wash, it was as if nothing had changed. I don't know how many times that snake and Kate had run the loop together, but they were still at it! But by the time they came around again, Kate was getting very red in the face. The sight of the snake's sizzling-fast, ground-hugging-greased-lightning motion, followed by the determined wind-sprint of its pursuer was quite an eyeful. At any rate, they ran the loop together one last time. During the entire chase, Kate was never closer than three meters behind that snake. And that was still the case as they made their last pass in front of me. It was at the point where they were about to hook left at first base again that she tried to dive on top of the snake. It was *not* a good decision. I mean, as far as dives go, the act itself might have earned a 9 from a judge of a diving competition. She did go horizontal, and the arms and hands were outstretched properly in front of her head. But the fact that she wasn't even close to the snake when the dive was attempted—and even less so when she landed—would by necessity deduct some points from that otherwise near-perfect dive. While in midair, the dive was a 9. But as soon as she landed, her score plummeted deep into the negative numbers. Indeed, when the landing occurred, it was my turn to utilize the foo foo word, as in: "*What the eff was that?*" This was uttered as Kate did a face-plant into a cholla-infested packrat midden. Her momentum caused her to slide all the way through that packrat mound. She would have slid even further if that wall of cholla-pods in that midden had not stopped her short. Ouch! I had very little time to enjoy the spectacle, because suddenly, it was a case of monkey

see, monkey do. Now *I* wanted to catch that snake! But my part of the chase was very short. Kate had tired that snake out enough that it overran the third base line, and continued westward to get to the palo verde tree that was standing at the edge of the road. It glided up the trunk, and shot westward up the first branch that it came to. It finally stopped when the front half of its body entered a clump of mistletoe that was suspended in the many twig-like branches of the lower portion of that tree. Once the head entered the mistletoe, the snake turned to look straight at me. This was quite easy to notice, as we were at eye level with each other. Perhaps if I had moved a little closer, it would have landed a strike on my schnozzola?

In any case, the snake had ceased its run in a place where it could be effortlessly snatched from the branch. It was also in a position that would allow the photograph of the century to occur. Had *that* happened, the cover of this publication would be greatly enhanced by a slender, elegant black, tan and pink-colored serpent that is the stuff of our dreams. The image would also contain the dark green colors of the mistletoe, the contrasting pale-green bark of the palo verde tree, with a smattering of stately saguaros standing proud against a deep blue Arizona sky. But **NO**! At the point where I was going to perform the short walk to my truck to get my camera, "you-know-who" arrived at my side. She was so full of adrenaline that she was literally dancing in place. She was absolutely out of control with her lust to grab that snake. Her eyes were angular slits, her visage grim and determined. One might think that hell and high water would not stop her from making the grab. But raging fires or rising flood waters were not involved here. It was a more serious problem—one that affected both parts of the anatomy that do the grabbing. In short, the fingers of both of her hands were welded to the palm by globs of cholla pods. Each hand was rendered useless by the pernicious, many-spiked pincushions of anguish. Despite my assurances that the capturing the snake was now a foregone conclusion, she wanted that snake, and she wanted it *now*! She was spitting and sputtering mad at the mere suggestion that I do anything but free her hands. She *demanded* that this was "her" snake, and *insisted* that I do something to free her hands so that she could grab it. She took great offense at what I thought was a sensible suggestion. If I had it to do over again, I probably would *not* have said: "Suffer, bitch! It will only take me a minute to take the picture." Her response to this statement was such that I decided to forget about taking the picture. She was the one who had started this capture attempt, and was determined to be the one to finish it. With a heavy sigh, I got out my pocket comb, stuck the tines of it under the glob of mini-porcupines gathered around her left hand, and gave a powerful yank. The spines were in her flesh so deep that there was a ripping sound as the cholla glob was torn loose from its moorings. And even though the yank was performed quickly, the flesh of her hand and fingers puckered outward in a hundred different places before tearing free. And blood leaked out of every newly created orifice in her hand. It *had* to hurt like bloody hell. But her predatory lust was so strong that she didn't seem to notice. Even though there were still at least ten individual spines still stuck a half inch deep into her fingertips, she used that free hand to grab the snake at mid-body. The flash of all-out triumph that swept across her visage at that moment would have made a *great* photo—if I had been allowed to grab my camera! She waited until I freed her other hand before completing the capture process. She now held the prize lovingly cradled in both hands, her smeared blood disfiguring its tan-colored flanks. Everything after that was rather anticlimactic. It was like the proverbial dog that captures the car. Now that you have it, what do you do with it? Normally, some images would have occurred. But I was no longer inspired to take any photos. We must have released it, for it did not ride with us to our final destination. But I have no remembrance of putting it on the ground and watching it crawl away. The only thing that I seemed to remember was the scent of molten butter wafting into my nostrils, and feeling this very strong urge to head for the nearest pancake house.

Well, we have been a little hard on Dr. Jackson by revealing this story. But this was by far the most unusual snake-chasing event that I have ever witnessed. And it took two to make this chase and grab experience as memorable as it was. We have a snake-deprived, crazed herpetologist from out of the north, and a snake that behaved in a highly atypical fashion. The normal capture attempt of a Coachwhip is over in less than five seconds. By that time, the snake is either in hand, or out of sight. Before launching into my next "Kate and a Coachwhip" story, it is time to build her back up to what she *really* is. She received her Ph.D. just two years before I met her. Her doctorate was in the field of Organismic and Evolutionary Biology, received from Harvard University. She has published widely in peer-reviewed literature, is an expert on the venom-delivering apparatus of snakes, and is an authority on venom types as well. She is absolutely fearless when it comes to entering the most dangerous places in the world to pursue her studies. She has 100 times more guts than this herper will ever display when it comes to her field study locations. Who knows just how close she has come to disaster while working in the Congo? She has recently co-authored the book *Snakes of Central and Western Africa*, and her book *Mean and Lowly Things: Snakes, Science and Survival in the Congo* is by far the most fascinating book about studying biological sciences in a remote and dangerous location that I have ever read. She speaks four different languages, and is highly fluent in both English and French. In short, she is everything that many of us *wish* that we could be. If her passion for wanting to chase and grab is a weakness, it is a weakness that many in our discipline possess. Based on the somewhat heated discussion at the end of this particular chase story, it may not seem possible that Kate would *ever* come back to Arizona to visit me again. But less than a year later, in April of 2005, she returned. Her reasons for doing so probably centered more on the notion that a rattlesnake that carried her first name was in trouble than any desire for my company. While she was here on that second visit, there was another Coachwhip encounter. But this one brought out the best in not only her, but both of us as a team.

Nearly every herpetologist in this country is familiar with the "playing possum" antics of Hog-nosed Snakes (genus *Heterodon*). What many herpetologists are unaware of is that Coachwhips also feign death. But they are less consistent in doing so, and their display is far less dramatic than that of the Hog-nosed Snake. I have witnessed Coachwhips feign death five times, and in all five cases, I was handling them when they did. In all five

These images of a Coachwhip (*Masticophis flagellum*) feigning death were all taken by Kate Jackson, 22 April 2005, on an unnamed gravel road in southern Pinal County, Arizona. In all, the event lasted four minutes, from 1032 to 1036 hrs. This was the fifth time the author observed this behavior in this species. All five cases happened as a result of the snake being handled.

Figure 1. The snake goes limp in the author's hands.

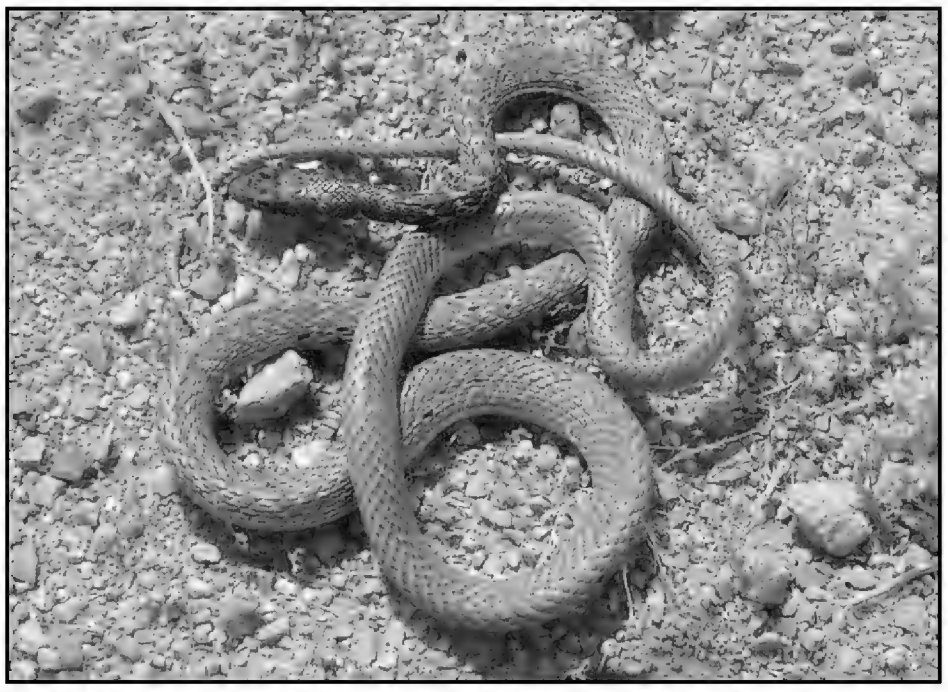


Figure 2. The author has posed the "dead" snake in a loose coil for a somewhat lifelike posed image.

Figure 3. (Putty in his hands). The author begins to manipulate the now-compliant snake into atypical postures.

Figure 5. Atypical posture number 2.

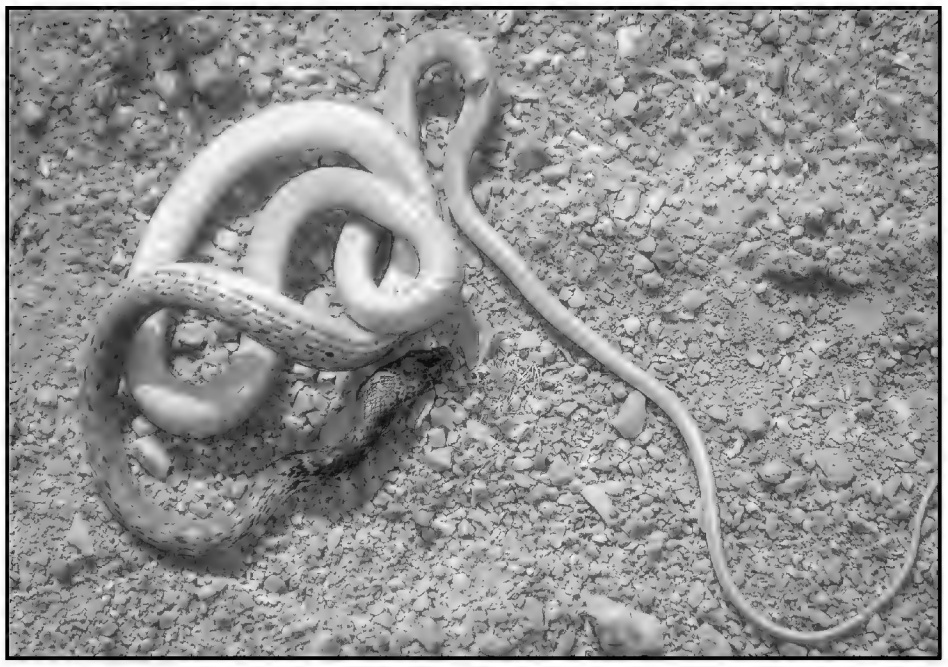


Figure 4. Atypical posture number 1.

Figure 6. Atypical posture number 3. Note that the head is slightly upraised, a sign that it is coming back to life. As soon as it was placed back on the ground, it rapidly crawled away.

cases, they just suddenly went limp in my hands. With the incident about to be described, we had just concluded some radio-tracking, and were on our way home. On 22 April 2005, at 1030 hours, the two of us were rolling down a rugged gravel road when we encountered a Coachwhip (~1 m total length) sprawled nearly straight out in the center of the road. While we did not take any microclimate information during or after this encounter, at 1006 hours, the ambient temp had been 32°C (89.6°F), and the unshaded ground (AKA "hot spot") temp had been 44°C (111°F). It had only become warmer in the subsequent 24 minutes. The rugged road we were traveling forced us to drive very slowly. This allowed for what I call "Buddy Ryan road cruising." Those familiar with the famed 1985 defensive unit for the Chicago Bears football team might remember Buddy's philosophy of "full frontal coverage." His theory was that as long as the opposing offense was in front of his wickedly awesome defense, there was no way they could score. It is when an offense gets behind a defense in football that touchdowns can happen. As it is in football, so also it is when road cruising. If the herp of the moment is in front of you, rather than behind, there is a much better chance of having your way with it. When the Coachwhip du jour was spotted, it was directly in front of us. It was a hot snake on a hotter road, and there was going to be no time for discussion about who would do the honors. It didn't help Kate's "must grab" cause by my stopping the truck in a place where the passenger door was blocked by a roadside creosote bush. There was no time for any thoughts of being a considerate host here. There was only time for a rapid egress and a quick pounce. I bolted from the truck, went down on one knee, and grabbed the snake mid-body with my right hand. Per my own preferred method of capturing small to moderate-sized Coachwhips, I deliberately put the heel of my left hand in front of this snake's snout, and received two quick bites as a result. What I have learned through the years is that if you let the snake bite you a couple times, the snake quickly ascertains that biting is ineffective. The reason the heel of the hand is used is because there is very little feeling in that part of the anatomy. After the biting was out of the way, (I have never had one bite me more than three times when doing this), I quickly and with great confidence scooped the snake off the ground. And I offered it maximum body support by cupping it in both hands, leaving the head unrestrained as I did. This is done because often times, the only contrasting colors on a Coachwhip are on the head and neck area. Normally, a loosely-restrained Coachwhip will take up a defensive position in my hands, and will lash out at anybody who approaches. But this one just immediately went limp. That was fortuitous for Kate, as it was at this point that she began to photograph it (Figure 1). As this was the fifth (and last-ever to date) Coachwhip to feign death in my hands, I knew what to expect. When they are death-feigning, they become quite compliant, and I was basically able to do whatever I wanted with this one. In order to avoid redundancy, we will let the photos and captions describe everything that followed. Just after Figure 6 was taken, as soon as I laid this snake back on the road, it jetted out of sight and out of our lives.

In wrapping this column up, I am ecstatic that Kate was there to photograph this particular sequence. It will most likely be the very last time that this author will ever see death feigning behavior with a Coachwhip. I believe that such behavior in the species will only happen when handling is involved. Personally, the thrill of the chase and grab ended during the early phases of the Suizo Mountain Radio-telemetry Study. By the time of Kate's first visit in 2004, I viewed the hands-on aspect of herpetology as being nothing more than a necessary evil—a tool required in order to produce science. There was no longer a thrill in catching the animal. If anything, by that point in time, I had grown tired and frustrated by it. I still continue to capture and process any Gila Monster that I find on the prowl, but certainly not because it excites me to do so. I do this *only* in order to assist a fellow-researcher with his spatial analyses project. And if called upon to assist other researchers in the field, I will not hesitate to chase and grab—if the cause is right. The local crowd that I hang with does *not* consider the ability to chase and grab a herp as anything heroic or special. That is a skill or ability that we expect of each other. We also expect that it is not something that any of us will even attempt to do. This is not said to put the mindset of Kate Jackson in 2004 down. The two of us have not spoken since 2010. She may feel altogether differently about the chase and grab by now. But if her mindset is still all about chasing and grabbing, bully for her! As has been highlighted many times over in these columns, I don't feel that my greatest contributions to herpetology will ever be because of chasing and grabbing. If any remembrance of me remains at all once I pass on, I *hope* it will be because I stepped backward—rather than forward—when that history-making moment came my way. The *real* challenge is to be able to get that excellent photograph and accompanying written observation *without* any human-caused disturbance being a part of the equation. A properly done *in situ* photograph of a herp doing something special is a frozen moment in time. However brief that frozen moment may be, such an image is still a very real history in the life of that particular animal. That particular herp would have likely been doing that particular thing at that particular instant in time and location—regardless of what the human aspect of the situation may have been. It is not what *we* do that interests me the most, but what *they* do.

This here is Roger Repp, signing off from Southern Arizona, where the turtles are strong, the snakes are handsome, and the lizards are all above average.

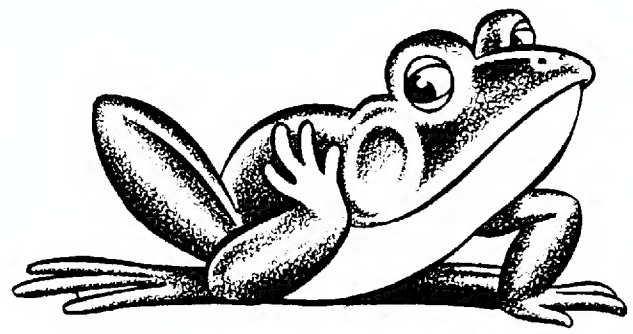
Literature Cited

Chippaux, J.-P., and K. Jackson. 2019. Snakes of central and western Africa. Baltimore: Johns Hopkins University Press.

Jackson, K. 2008. Mean and lowly things: Snakes, science and survival in the Congo. Cambridge, Massachusetts: Harvard University Press.

The Tympanum

My message to fellow CHS members



Our world, the way we knew it, has changed. We must think positive and learn from the lessons of this pandemic.

We now have to reinvent our lives in so many different ways both personally and professionally. We still don't know the full outcome of this unprecedented catastrophe, but in the meantime we must hold onto whatever we can as it relates to happiness, our passions and what keeps us going.

On a more specific subject, the CHS needs to be reinvented as well. Our members have to guide us and assist us in putting together a new model for **The Chicago Herpetological Society**.

Over its history, it has seen so many changes with the internet, competition with technology and just the mentality of negative influences to the younger generation regarding animals, diseases, and reptiles in particular. Now we have the effects of Covid-19. Many can say that these changes were negative but I say that most of them were very positive. We just haven't found the ideal processes in navigating through them. Now is the time to accomplish that. The answers are out there, we just have to find them.

We are all now reassessing our priorities in life and valuing our families and loved ones in a new way. Things we took for granted are now appreciated in a much more deeper way. Just to be outside, a run in the park or a walk in the woods is now so much more meaningful. Nature has not stood still the way we've all been forced to. The positive side of this dilemma is the fact that reptiles are really neat. They are interesting and their popularity is unwavering. There is an enormous supply of captive bred live reptiles which allow us to learn about their interesting behaviors and the related responsibility in caring for them. They ultimately teach us about the world we live in and the importance of biodiversity and conservation. And today, not like years ago, we have a wealth of information available along with quality products which enhance the relationship between the reptile and the keeper.

The CHS needs to create a "young thinking" positive minded but pragmatic task force to help develop this new model for the future generations of reptile lovers.

NOW IS THE TIME TO DO THIS.
HOW DO WE GET STARTED?

Bob Krause, bobkrause001@gmail.com

Minutes of the CHS Board Meeting, April 9, 2020

The April 9 board meeting was conducted via a Zoom video conference. John Gutierrez called the meeting to order at 7:34 P.M. Board members Rich Crowley and Mike Scott did not participate. Minutes of the March 12 board meeting were accepted.

Officers' reports

Treasurer: John Archer briefly went over the March financial reports. Losses due to cancelling ReptileFest should be no more than $800.

Vice-president: Jessica Wadleigh will attempt to reschedule the April speaker when that becomes possible.

Membership secretary: Mike Dloogatch went over the list of newly expired memberships.

Media secretary: Annalisa Kolb reported that Caitlin Monesmith is pulling together a "virtual 'Fest" and is looking for presenters. Annalisa will reach out to a few members who may be interested. Discussions ensued regarding CHS online presence: How often are our media pages updated / posted to? Why do we have 13 administrators on Facebook, some of whom are no longer members? Do we have posted rules for what can and cannot be posted on our pages?

Committee reports

Shows: Gail Oomens reported that several of our previously planned shows are interested in rescheduling, but this will have to wait until the stay-at-home order is removed.

ReptileFest: John Gutierrez will reach out to ZooMed again regarding the status of their corporate sponsorship.

Old business

John Gutierrez is investigating the possibility of holding satellite meetings at the DuPage County Fairgrounds.

The meeting adjourned at 8:46 P.M.

Respectfully submitted by recording secretary Gail Oomens

Advertisements

For sale: **highest quality frozen rodents**. I have been raising rodents for over 30 years and can supply you with the highest quality mice available in the U.S. These are always exceptionally clean and healthy with no urine odor or mixed in bedding. I feed these to my own reptile collection exclusively and so make sure they are the best available. All rodents are produced from my personal breeding colony and are fed exceptional high protein, low fat rodent diets; no dog food is ever used. Additionally, all mice are flash frozen and are separate in the bag, not frozen together. I also have ultra low shipping prices to most areas of the U.S. and can beat others shipping prices considerably. I specialize in the smaller mice sizes and currently have the following four sizes available: Small pink mice (1 day old—1 gm) , $25 /100; Large pink mice (4 to 5 days old—2 to 3 gm), $27.50 /100; Small fuzzy mice (7 to 8 days old—5 to 6 gm), $30/100; Large fuzzy mice / hoppers (10 to 12 days old—8 to 10 gm), $35/100 Contact Kelly Haller at 785-224-7291 or by e-mail at kelhal56@hotmail.com

Line ads in this publication are run free for CHS members—$2 per line for nonmembers. Any ad may be refused at the discretion of the Editor. Submit ads to mdloogatch@chicagoherp.org.

NEW CHS MEMBERS THIS MONTH

Theresa Delgado
William Michael Forcade
Amy Motchnik

UPCOMING MEETINGS

The May 27 meeting of the Chicago Herpetological Society has been canceled.

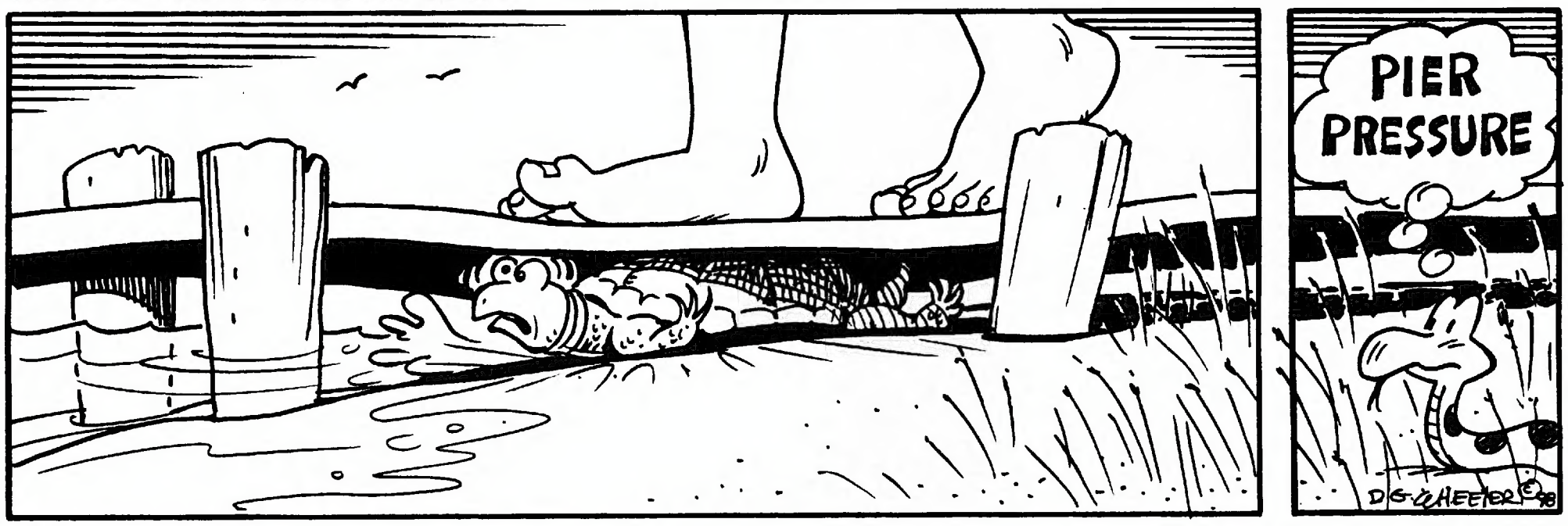
The June 24 meeting has not yet been canceled, but it probably will be.

The regular monthly meetings of the Chicago Herpetological Society take place at Chicago's newest museum—the **Peggy Notebaert Nature Museum**. This beautiful building is at Fullerton Parkway and Cannon Drive, directly across Fullerton from the Lincoln Park Zoo. Meetings are held the last Wednesday of each month, from 7:30 P.M. through 9:30 P.M. Parking is free on Cannon Drive. A plethora of CTA buses stop nearby.

Board of Directors Meeting

Are you interested in how the decisions are made that determine how the Chicago Herpetological Society runs? And would you like to have input into those decisions? The next board meeting will be held online. If you wish to take part, please email mdloogatch@chicagoherp.org.

THE ADVENTURES OF SPOT



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